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**Applying the Theory of Planned Behaviour with the addition of role-identity to predict  
lecture attendance behaviour.**

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A dissertation submitted in partial fulfilment of the requirements for the reward of the degree of  
Masters in Organisational Psychology

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### **Abstract**

This study aimed to investigate the behaviour of lecture attendance amongst undergraduate students at the University of Cape Town (UCT) by applying the Theory of Planned Behaviour (TPB). A total of 169 respondents completed either a hard copy or online survey whilst meeting the inclusion criteria. The sample consisted of students from a first-year mathematics course (which had compulsory lecture attendance for registered students) and from a first-year organisational psychology course (which had voluntary lecture attendance for registered students). The study aimed to broaden the limited knowledge which exists around the perceptions of students regarding lecture attendance specifically in a South African context. Confirmatory Factor Analysis, Exploratory Factor Analysis and reliability analyses strongly supported the application of the TPB model scales and role-identity scale. Regression analysis showed that only attitudes help to predict intention towards lecture attendance behaviour where subjective norms, perceived behavioural control and role-identity were not significant predictors. Intentions were also seen to be highly correlated to actual attendance behaviour as well as helping to predict actual attendance behaviour. Actual behavioural control (ABC) was not seen as a moderator between intention and actual lecture attendance. Practical and theoretical implications were discussed. The information generated by this study can be used to further understand the occurrence of, and students' perceptions of lecture attendance.

*Keywords:* lecture attendance, the theory of planned behaviour, attitudes, subjective norms, perceived behavioural control, role-identity

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## **Introduction**

Lecture attendance has been a topic of debate among many researchers in terms of its utility, outcomes and necessity across varying studies (Jakee, 2011; Nordmann, Calder, Bishop, Irwin & Comber, 2018; Gbadamosi, 2015). As a consideration of what determinants allow for the success of lectures has increased, a greater understanding of the utility of lectures within the university environment has been established. Although many studies have linked lecture attendance to educational outcomes such as engagement (Gabrielle, 2012) and academic performance (Thatcher, Fridjhon & Cockcroft, 2007), questions remain around what the determinants are of student's decisions to attend lectures.

Lecture attendance is important to examine given the close proximal relationship it has in relation to predicting student performance. It can be analysed as an amenable behaviour towards facilitating strategies for change that can create greater success within the university environment (Jakee, 2011; Nordmann, Calder, Bishop, Irwin & Comber, 2018; Gbadamosi, 2015). Within South Africa, the social climate within universities has seen occurrences of protests and social instability at the forefront (Badat, 2016). A consideration of how the educational outcomes of universities can be improved has become a topical point, particularly around how the mode of instruction can be analysed for improvement. This has led to the question of whether accessing information through lectures remains vital. Though access to information has increased in recent times through the introduction of readily available internet and devices which increase portability, lectures have remained the dominant mode of traditional learning across most universities (Yeung, Raju & Sharma, 2016).

Thus, the Theory of Planned Behaviour (TPB) (Ajzen, 1985) can be applied to understand the reason for the phenomenon to not only understand what happens when lecture attendance is low or high but what factors can be seen to predict why lecture attendance may be high or low (Armitage & Conner, 2001). This can ultimately be used to understand the perceptions and behaviours related to lecture attendance. The TPB has been applied to examine various social behaviours with the underlying premise of the theory being that behaviour is a result of a preceding intention being established to engage in the behaviour. Research applying the TPB model in



relation to lecture attendance has found minor limitations in determining the predictability of the model thus the addition of role-identity can be explored as a strengthening factor towards intention. Research has found the utility of role-identity in creating higher predictability of the TPB model, but limited research has been conducted (White, Thomas, Johnston, & Hyde, 2008; White, O'Connor & Hamilton, 2011).

Thus, considering the paucity of research around applying the TPB with the addition of role-identity in examining lecture attendance, the present study will examine the level of prediction the model creates and the function of role-identity within the model.

### **Research aims and objective**

Due to the limited understanding around the beliefs of students' regarding lecture attendance, this study will apply the TPB with the additional factor of role-identity to assess which factors can potentially predict the intentions of students to attend lectures across a sample of undergraduate students. The outcomes of the study should allow for the development into the understanding of why or why not students attend lectures and allow for the development of effective methods and policy which may help in the improvement of lecture attendance behaviour. Thus, universities may enable students to increase academic behaviour and performance (Gabrielle, 2012; Thatcher, Fridjhon & Cockcroft, 2007),

### **Research Question:**

To what extent can the Theory of Planned Behaviour be applied to predict the behaviour of student's lecture attendance with the addition of role-identity as a predictor of behavioural intention?

### **Dissertation structure**

The structure of the dissertation consists of five sections. Section one will introduce the topic by outlining existing background literature relating to the study. This will include a detailed

description of the variables under consideration. Thereafter, the hypotheses the study aims to test and explore will be outlined. Section two will outline the method that was utilised within the current study and provide detailed steps which were employed to enable future replication. Thereafter, section three will outline the results in relation to the analyses utilised to create a statistical representation of the results found. Finally, section four will outline the main findings of the study through a discussion in relation to previous literature, the demographic sample and context of South Africa. This section will also outline the implications of the study and acknowledgement of the limitations in relation to recommendations for future research. Finally, this section will provide a conclusion of the dissertation.

## **Literature Review**

The aim of this section is to investigate the application of the Theory of Planned Behaviour (TPB) in determining the behavioural outcome of student's lecture attendance through existing literature available. Firstly, the literature search procedure will be outlined. Thereafter, lecture attendance will be discussed, followed by an explanation of the TPB and relating variables. Subsequently, previous use of the TPB in research will be examined and thereafter its use in exploring lecture attendance. An exploration into role-identity and its relation to the TPB and lecture attendance will be discussed. Finally, the hypotheses being tested within the study will be presented.

### **Literature search procedure**

The literature search strategy that was employed for this study was four-pronged. Firstly, using PRIMO (an electronic-based search engine that searches for literature across multiple web-based search libraries) as a starting point, an initial collection of literature was established. Thereafter, using available online platforms individually, (JSTOR, Wiley, SAGE, Academic Search Premier and PsycINFO) additional literature was gathered to gain further insight. Additionally, central references from seminal articles were collated and explored for further insight. Lastly, dictionaries, handbooks and encyclopaedias were consulted to establish concise and meaningful definitions of each construct of interest within the study. This concluded the initial literature search. Thereafter, follow up searches were conducted to gain further insight into specific literature needed as the research process unfolded.

### **Lecture Attendance**

Lecture attendance is seen as being present at a lecture for the full duration. It is seen as attention-based behaviour. Therefore, it is seen as being physically and mentally present during a lecture period at the allocated venue (Hume, Mort, & Winzar, 2007). Lecture attendance has been examined across many platforms in relation to outcome variables such as performance (Devadoss & Foltz, 1996; Louis, Bastain, Mckimme & Lee, 2015; Thatcher, Fridjhon & Cockcroft, 2007),

engagement (Gabrielle, 2012; Romer, 1993) and motivation (Kottasz, 2005; Moore, Armstrong & Pearson, 2011). Teaching styles of lecturers have been seen to be a predominant predictor of whether students attend lectures. Devadoss and Foltz (1996) found that factors surrounding student's behaviour, teacher's attitudes and course characteristics show an increase in lecture attendance and performance. The study found that performance and grades were influenced by motivation, financing, having a job, quality of teaching and prior grades. Louis, Bastian, Mckimmie and Lee (2015) showed a direct correlation between performance and attendance by measuring attendance directly with GPA attained across an undergraduate psychology class. Further proving the significant relationship between performance and lecture attendance, concluding that the fewer classes attended, the worse a student performed. Allsopp (2002) reported that students who did not attend lectures tended to fail the related course, however, noted that though anecdotal evidence exists there is little effort into finding empirical data into low lecture attendance. Various methods have been utilised to demonstrate the causal relationship between performance and attendance such as randomised experimental procedures (Chen & Lin, 2008), testing various models (Jones, 1984) and utilising panel data (Rodgers, 2001), however, these studies are limited.

Looking further into influencing factors, Fjortoft (2005) found that the behaviour of teachers such as how they teach, the kind of handouts they give, and their leniency influenced student's attitudes towards attendance and ultimately their attendance. Romer (1993) also found a correlation between lecture attendance and the quality of instruction. The study showed that classes taught by regular faculty members had higher attendance rates compared to that of classes that had out of faculty lecturers/ guest lecturers. Interactive teaching styles are perceived as highly pivotal in the teaching process by students (Meguid & Collins, 2017). Looking across different years of study Maloney and Lally (1998) used linear regression for analysis amongst second and third-year students in relation to incentivising lecture attendance. A comparison was created which showed that students in the second year of university had higher attendance compared to that of students in the third year. Incentives were therefore not seen as a determinant of attendance as it is seen that third-year students have higher incentives but lower attendance rates. Furthermore, later research by Zinski, Woodley Blackwell, Belue and Brooks (2017), found that first-year students preferred dedicated teaching through lectures and valued instructional learning compared to students in later

years of study. First-year students were seen to value lectures more as they integrated into the university environment. The study also further proved the correlation seen between attendance and performance looking at how it accounts for variance in lecture attendance behaviour.

Further analysis of lecture attendance has looked more into the inherent characteristics of students to predict lecture attendance. Kottasz (2005) looked at the attendance rates of students in relation to their ability and motivation. Ability looked at in relation to if students could attend lectures or not due to circumstances such as having a job. Illness, timing, work commitments and other assignment commitments were identified as the most important factors for non-attendance. One of the top reasons why students attend lectures is that they see lectures as having a direct correlation to what grades they will receive. The study concluded that both intrinsic and extrinsic motivation influences attendance behaviour, where if a student is motivated to attend lectures it is most likely through the presence of incentives. Hinnert and Bone (2002) found similar results where students attributed an increasingly negative attitude towards lectures due to the act of attending lectures not being formally assessed (no incentive existing to attend lectures). Attitude towards lecture attendance has also seen to increase positively when monitored. Students show an increase in attendance when it is not compulsory but is monitored. The resultant increase in attendance due to monitoring of attendance subsequently showed an increase in performance amongst students. This showed a positive relationship between attendance and performance (Dickson & Stephens, 2016).

Looking further into what affects student's attitudes towards lecture attendance, Massingham and Herrington (2006) conducted a survey amongst students at the University of Wollongong to understand the reasons for non-attendance. The main reasons found for not attending lectures was being busy, sick, bored, at work, the teaching and having technological alternatives. The main factor seen to affect a student's attitude towards lectures was the teaching style of the lecturer including the teaching process. This effect on attitudes was ultimately seen to affect the overall behaviour of a student's willingness to attend lectures. Students are also seen to have an increased positive attitude towards lectures when they can identify objective and concrete benefits from attending lectures. A study by Baderin (2005) found that 77% of students across an undergraduate class found that students believed that they would have a more positive attitude

towards attendance if it counted towards assessment marks. Attitudes towards lectures are also seen to differ between low and high performing students. Owston, Lupshenyuk and Wideman (2011) found that lectures were seen to be highly valued by high performing students who had positive attitudes towards lectures. The study showed that though low performing students did not attend lectures and had a negative attitude towards lectures, a provision of an alternative method (recorded lectures) increased their success minimally which indicated that having an alternative did not devalue lectures for students who had a positive attitude to attend. Access to lectures is also hindered when the timing of the lecture is not amenable to individual students. If a lecture clashes with a student's schedule by being distant from other lectures or at an inconvenient time (early morning or late afternoon) students see this as a top reason for having a negative attitude towards lectures (Hafeez, Khan, Jawaaid & Haroon, 2014).

Looking into a South African context Schmulian and Coetzee (2011) looked at an accounting class at the University of Pretoria to investigate the reasons for non-attendance at lectures and if non-attendance correlates to performance. The main reasons found for non-attendance were part-time work, illness and working on coursework, with emphasis placed on the lack of transportation. Attendance before each assessment was also measured in relation to the mark obtained for the assessment. This was used to determine if there is a correlation between attendance at lectures and performance. It was found that an increased rate in attendance correlated with an increased grade percentage. The lowest mark obtained aligned to a 24% lower attendance rate than the average attendance rate of high-performing students.

Shenker and Eyal (2013) looked at tutorial attendance at the University of Cape Town. An experimental design was utilised to see what impact the encouragement of tutorial attendance has on grades. Though tutorials have a slightly different format to lectures, attendance behaviours can still be observed. The treatment that was implemented was emailing students once a week to motivate them to attend tutorials. Software was used to indicate if the student received and opened the email. The results found showed that low-academic achievers were not responsive to the treatment. This study emphasised the correlation between performance and attendance. An additional study in a South African context by Thatcher, Fridjhon and Cockcroft (2007) examined lecture attendance of an undergraduate psychology class at the University of Witwatersrand. It was

seen that lecture attendance is a good indicator of academic performance expectancy. This was further seen through a study by Walbeek (2004) which conducted a study amongst economics students at the University of Cape Town which saw lower performing students attending fewer lectures. It was seen that students who attended lectures on a regular basis performed on average 7.3 percentage points better than students who did not attend lectures.

Steenkamp, Baard and Frick (2009) found similar results in a study across financial and accounting courses at a South African university investigating factors which contribute to first-year success. The study found that students who believed attendance would help with their performance attended lectures on a regular basis and consequently also saw a correlation in an increase in their corresponding results. Papageorgiou and Townsend (2014) further saw a correlation between lecture attendance and performance. Differences were seen between gender, showing that females attended more lectures and thus had higher results. Furthermore, Khine (2016) studied lecture attendance amongst fourth-year undergraduate medical students at Sefako Makgatho Health Sciences University and found a correlation between attendance and performance. The study found that out of a class with 175 registered students, the top ten students attended at least 50% of all lectures. The three students who failed the tests and final examinations had a 20% lower attendance. There were also three outliers who were identified to have performed poorly but attended over 80% of the lectures. These results showed that on average an increase in attendance correlated to an increase in performance.

Overall lecture attendance can be seen to affect motivation, engagement and most importantly performance. The correlation between performance and attendance has been found across multiple studies emphasising the importance of promoting lecture attendance. Differences are seen across gender but also across the different years of study, showing that students who initially enter university, place more importance on lecture attendance. A meta-analysis by Donovan and Radosevich (1999) found that when individuals engage in distributed learning, they outperform individuals who engage in massed learning by almost half a standard deviation ( $SD=46$ ). This finding promotes the necessity for lecture attendance considering that students who do not attend lectures are likely to compensate for the lack of engagement with materials by engaging in massed learning (i.e. cramming for exams). The study additionally found that though across

studies the debate of effectiveness of different modes of instruction (small group discussions, practical exercises etc.) continues, lecture attendance is still seen as beneficial for performance. Thus, importance is seen in needing to understand lecture attendance, due to the multiple consequential effects seen across studies. The most important correlation seen between lecture attendance and performance (Louis, Bastain, Mckimme & Lee, 2015; Papageorgiou & Townsend 2014; Schmulian & Coetzee 2011; Steenkamp, Baard & Frick, 2009; Thatcher, Fridjhon & Cockcroft 2007; Walbeek 2004). This link seen across research creates importance around the examining of lecture attendance and outlines how intention, control and attitudes are pivotal variables in understanding lecture attendance. However, studies have found it difficult to fully understand the determinants of attendance. Therefore, the TPB can be applied to create a deeper understanding of this phenomenon.

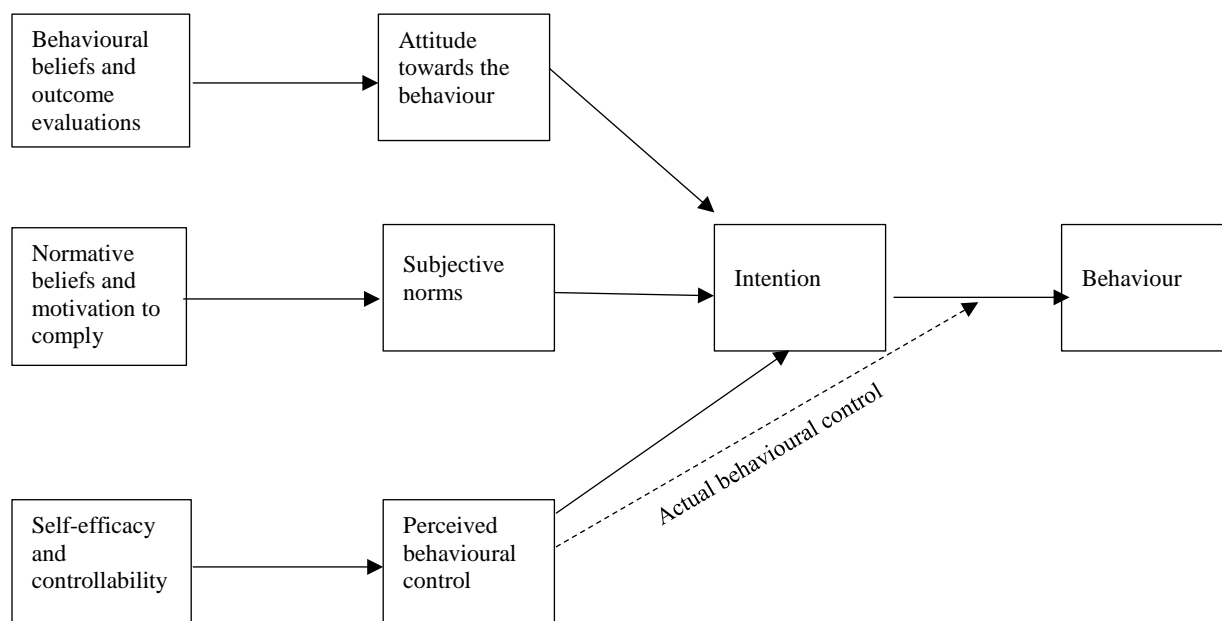
### **The Theory of Planned Behaviour**

In 1985, Icek Ajzen proposed the TBP (Figure 1) which was developed from the theory of reasoned action (TRA), which was proposed by Icek Ajzen together with Martin Fishbein in 1980. The development of the TRA was grounded in a multitude of theories around attitude such as attribution theory, consistency theories (such as the balance theory by Heider (1946), the congruity theory by Osgood and Tannenbaum (1955) and Festinger's (1957) cognitive dissonance theory), expectancy-value theories and learning theories. According to the TRA, if one assesses the advised behaviour as positive (attitude), and if people around them, which they consider important want them to perform the behaviour (subjective norm), then a resultant higher motivation (intention) is seen towards the behaviour. The resultant intention is seen to be an immediate antecedent of the performance of a behaviour.

The TPB is an extension of this model, which looks at the additional component of perceived behavioural control (PBC), which is seen to influence both intention and behaviour. Looking closely at the TPB model it determines intent to perform a behaviour by three individual predictors; attitude, subjective norms and PBC (Rivis, Sheeran, & Armitage, 2009). The extension of the TRA by adding the third variable of PBC addresses the limitation of the TRA model, which only predicts behaviours under volition control (Rivis, Sheeran, & Armitage, 2009). PBC has been



examined across multiple social cognition models as a key variable to predict health behaviours (such as the health belief model which was developed in the 1950s by social psychologists Hochbaum, Rosenstock and Kegels and the protection motivation theory by Rogers in 1975). This addition enables the model to extend to analyse the constraints on an action perceived by the actor (Armitage & Conner, 2001). The inclusion of PBC also added another variable to the model of actual behavioural control. The success of a performance of behaviour is seen to depend on not only the extent to which a favourable intention is measured through the three variables of attitude, subjective norms and PBC but also determining whether there is a sufficient level of behavioural control (actual behavioural control). Actual behavioural control (ABC) is often difficult to measure accurately, therefore PBC is often used as a proxy measure. Figure 1 below outlines the TPB model variable relationships.



*Figure 1. The Theory of Planned Behaviour variable model (Ajzen, 1991)*

### ***Assumptions of the theory***

1. Individuals are rational and will make systematic use of available information

2. Individuals will consider the consequences of their actions before they determine whether to engage in behaviours.

### ***Outline of TPB constructs***

*Attitudes.* The degree to which a person evaluates a behaviour as favourable/unfavourable is seen as their attitude. It is a function of an individual's salient behavioural beliefs (e.g. attending lectures will provide me with information I cannot receive from readings) and the value which is associated with the belief (e.g. gaining more information from lectures will help me achieve a higher grade which is important to me) (White et al., 2008). The formation of an individual's attitudes is seen to be led by the related behavioural belief (Ajzen, 2012).

*Subjective norms.* The extent to which an individual perceives pressure from significant others to perform a focal behaviour is seen as an individual's subjective norms (Ajzen, 1985). It is the function of the beliefs of the referent group's approval/disapproval of engaging in the behaviour (e.g. my parents want me to attend lectures) and the motivation of the individual to comply with these beliefs (e.g. I want to make my parents proud by attending all my lectures).

*Perceived behavioural control.* Thirdly, perceived behavioural control (PBC), which refers to the beliefs one has of whether they possess the required abilities, opportunities and resources to perform the behaviour successfully (Ajzen, 1991). PBC is seen to be determined by two factors; namely, control beliefs and perceived power. PBC indicates that the motivation an individual has to perform a behaviour relies on how difficult the behaviour is perceived to be and how successfully the individual can perform the behaviour. PBC can reflect past experiences, the anticipation of possible circumstances and attitudes of the influential norms.

*Actual behavioural control.* Lastly, actual behavioural control (ABC) can be outlined. Though an individual may have an increase in intention due to an increase in subjective norms and attitudes, there may still be factors which are beyond the individual's control. These factors can range from not having enough resources to not possessing the right skills. ABC is seen as not what is perceived by the individual, but what is the actual access the individual has to perform a certain

behaviour due to the skills and resources they may have. It is seen to influence the model by moderating the relationship between intention and behaviour. However, as ABC control may be difficult to measure in varying behavioural contexts, PBC is therefore used as a proxy measure (Ajzen, 1991).

### The Theory of Planned Behaviour in research

A large body of research conducted since the inception of the model across varying streams of study corroborates the central tenants of the theory. The TPB has been widely used to predict health-related behavioural intentions and attendance decisions. The decision to attend breast cancer screening was examined by Drossaert, Boer, and Seydel, (2005). Decisions to attend health clinics have also been examined (Norman & Conner, 1996; Orbell & Hagger, 2006). The TPB has also been applied to a range of studies in pro-social behaviours such as charitable giving (McSweeney & Smith, 2007) and anti-social behaviours such as the prediction of cyberbullying (Brack, Caltabiano N.J., Caltabiano M.L., 2014). Within the field of environmental psychology, the TPB has been widely used (Heath & Gifford, 2002; Nigbur, Lynos & Uzzell, 2010; Onwezen, Bartels & Antonides, 2014). Figure 2 below outlines the increase in citations of the theory between the period of 2004 to 2018.

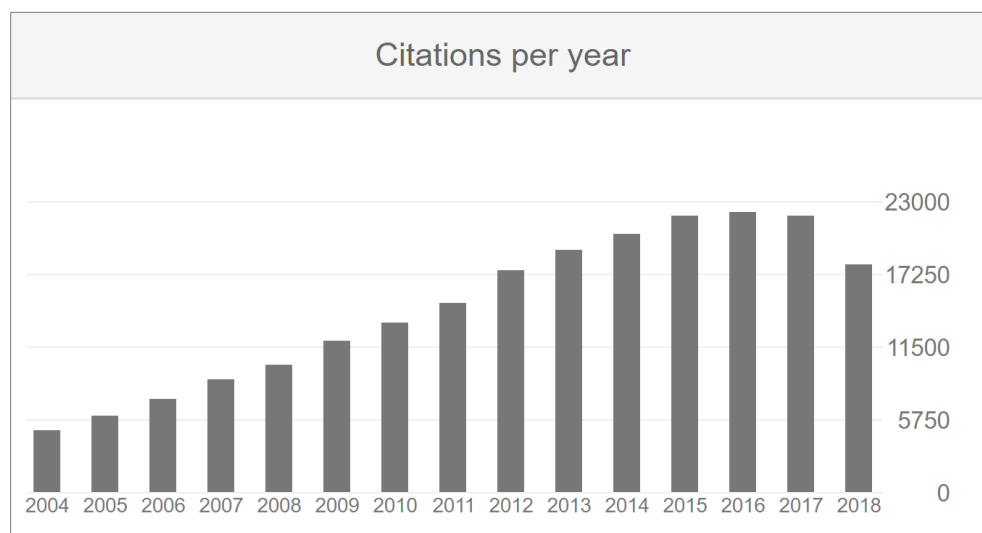


Figure 2. Graph depicting the citation of the TPB from 2004-2018

*Note.* Reprinted from Ajzen, I. (2019). Icek Ajzen - Google Scholar Citations. Retrieved 16 September 2018, from <https://scholar.google.com/citations?user=FS6qgIwAAAAJ&hl=en>

A meta-analytical review by Ravis, Sheeran, and Armitage (2009) across multiple behavioural domains showed significant results in the relationship between intention and behaviour. Support for the theory can be seen across multiple studies around various behaviours including behaviours within an educational environment (such as a study by Shevlin & Millar (2006) examining career-information seeking amongst school students). Furthermore, a statistical analysis can be seen through a meta-analytical review conducted by Armitage and Conner (2001) looking into the efficacy of the theory across 185 independent studies. Preceding this a meta-analytical study by Sutton (1998) investigated the predictive power of the theories' constructs. The underlying conclusion which was found was two-fold. Firstly, the TPB variables are seen to strongly predict and explain behaviour. Secondly, the variables within the model are seen to fall within a high range of explained variance of between 40% to 50%, showing the predictive power of the model. However, variance explained across studies varied in the significance across the theories' constructs placing more importance on some constructs within the model. The review found that the theory accounted for 27% variance with average correlations of .52 between intention and PBC with behaviour. Over and above variables in relation to intention, PBC adds an average of 2% to the prediction of behaviour. This finding demonstrates the utility of the PBC construct in the TPB.

Looking at intention an account for 39% of the variance is seen, and the average multiple correlations of attitude, subjective norm and PBC with intention is .63. The intention to behaviour average correlation in the Armitage and Conner (2001) meta-analysis was .47. Randall and Wolff (1994) saw a similar finding of an average correlation of .44 (across 98 varying studies). Sheeran and Orbell (1998) also found an average correlation of .44 (across 28 studies of condom use). ABC can also be seen to be applied within TPB studies. Varying applications are seen such as PBC being used as a proxy measure for ABC to moderate the intention-behaviour relationship (Barua, 2013; Sheeran, Trafimow, & Armitage, 2003; Martinez, & Lewis, 2016). Though the utility of ABC as a moderator has been investigated in limited contexts, a study Rosenthal (2018) investigated the application of ABC and found a significant moderating effect of ABC between

intention and behaviour observed. The study found that individuals who possessed behavioural intention were more likely to engage in the behaviour when their actual control increased. It is also seen to be theoretically meaningful when a separation is created between perceived control (PBC) and actual ability (ABC) (Fishbein, & Ajzen, 2010). Therefore, though PBC can be used as a proxy measure for ABC, it is suggested to separate these constructs for more accurate measurement. This aligns with the original theory tenants.

Overall, the above findings illustrate the efficacy of the theory across multiple studies. The above variance analysis shows significant results and explains the importance of each factor. A further exploration into the role of ABC is also emphasised. However, there remains a significant proportion of variation in intentions and behaviour that is unaccounted for. This leads to the suggestion of exploring additional factors within the model.

### **Lecture attendance and the TPB**

Previous studies have employed the TPB to predict various behaviours within the educational environment such as presenting at class lectures (Prislin & Kovrlja, 1992; White et al., 2011). However, few have looked specifically at applying the theory to predict lecture attendance. In-class participation has been successfully predicted using the theory. A study by Girardelli and Patel (2016) utilised a conceptual design using a PLS-SEM Model. It was hypothesised that attitudes, subject norms and PBC/self-efficacy are functions of the intentions of a student to participate in class. Studies such as this have formed a basis to further utilise the theory within an educational context. Although some researchers have applied isolated constructs from the TPB to understand lecture attendance such as subjective norms (Fredricks & Dosset, 1983), attitudes (Gump, 2006) and control factors (Van Blerkom, 1992), there is limited research in the utility of the theory in its entirety to predict lecture attendance.

There are exceptions such as the study by Ajzen and Madden (1986) which aimed to predict lecture attendance amongst 169 undergraduate students. The behaviour of lecture attendance was monitored over a 6-week period over 16 lecture sessions. A survey aligned with the guidelines for generating a TPB questionnaire was administered. A pilot study was conducted among 24 students

to develop a measure for PBC, which aligned with the specific sample group. The survey was administered after eight lecture sessions. The results of the study showed attitudes, subjective norms and PBC were highly correlated and significant predictors with intentions, which accounted for 68% in variance. Intention was a significant predictor of behaviour, which accounted for 36% of variance in lecture attendance. Following this study Sheeran, Norman and Orbell (1999) showed the value of the TRA model in predicting lecture attendance, which created a foundation for the utility of the TPB. The study observed the attitude and intention correlation across multiple behaviours including lecture attendance. The results showed that attitudes and intention had a higher correlation compared to that of intention to behaviour. Attitudinally controlled intentions had higher predictability on behaviour than normatively controlled intentions on behaviour.

Gump (2006) similarly observed attitudes and related intentions towards attending class and created a comparison to the actual behaviour observed. A Likert scale survey was used with a limited scope. Correlational analysis was used, and it was hypothesised that the correlation between student's intentions to attend class would positively correlate to their actual attendance. Results supported the hypothesis with a statistically significant positive relationship seen between the importance students place on attending class (intention) and their actual attendance of class (behaviour observed). Students who did not complete the survey also had poor attendance and it was seen that the data was saturated with students who valued class attendance (increased effect of attitude, subjective norm and PBC on intention).

To further explain the unaccounted variance found across studies Webb et al. (2007) conducted an experiment, which implemented an intervention on intentions (specifying and planning when, where and how to attend lectures) in relation to personality traits. These two elements were looked at to increase the predictive power of intentions and ultimately the prediction of the behavioural outcome (lecture attendance). The personality traits under observation were conscientiousness and openness to experience. With the addition of these two variables, the overall results increased the explained variance to 47%. This is seen to be higher than the average explained variance seen across studies of 39%. Therefore, this showed that the addition of variables can help explain unaccounted variance in results.

Similarly, a study by Prislin and Kovrlija (1992) looked at trying to identify additional factors to explain the unaccounted variance found through the TPB. The study looked at high and low self-monitors in explaining the effect of individual monitoring in predicting lecture attendance. The study applied the premise that the model should see an increase in variance due to the introduction of personality traits. The study was conducted on 53 undergraduate psychology class students. Subjects were split based on the initial self-monitoring score (either low self-monitoring or high self-monitoring) and then compared based on hierarchical regression results. The results suggested that behavioural intention differed across differences in self-monitoring. Initial variance analysis excluding self-monitoring variables found the percentage of variance of manifested behaviours seen in relation to intention was 37% compared to 42.5% when looked at with the full set of predictors. Though the variance explained did not increase significantly, (difference equalled 5.5%) the difference suggests that unaccounted-for variance can be found in additional variables.

Looking further into the shortfall of variance, a study by Randall (1994) examined the predictive value of TPB in relation to lecture attendance amongst students taking elective business courses. The study found that the results explained for 39% of the variance in intentions to initially enrol in the course and only 14% of the variance in attendance. These findings suggested that additional variables would need to be considered to improve the predictive value of the TPB model. A premise of the TPB emphasises the belief that the stronger a person's intention is to perform the behaviour observed, the more likely the increase in the success of carrying out the behaviour occurs.

Therefore, as seen in previous research, an emphasis has been placed on increasing the variance explained through intention to increase the predictive value of the behaviour observed. Enhancing the model by adding variables (such as personality traits (Webb et al., 2007), high, and low self-monitors (Prislin & Kovrlija, 1992)) linked to the behaviour in question is seen to further explain intention and ultimately the behaviour in question. Gifford (2014) argued that the TPB has been extensively used and despite the theory's attractive parsimonious account of predicting behaviours, there are concerns which are seen around its incompleteness. Ajzen (1991) noted that additional predictors could be included within the TPB model to increase the model's predictive ability.

To overcome the shortfall in variance in results across TPB and lecture attendance studies, there has been a recent interest in looking at role-identity as an influencing factor of intention to enable a higher predictive value between behavioural intention and the behaviour observed. The inclusion of an assessment of the potentially generative force of one's role-identity has increased amongst TPB researchers. Therefore, if students perceive attending lectures as a key part of their role as a student, then an increase in lecture attendance is likely to occur. Therefore, looking at a summary of lecture attendance studies in relation to the TPB a short-fall in variance between intention and predictive variables of intention is seen. Therefore, additional variables may increase the overall predictive value of the model (See Table 1 below for a summary of studies looking at lecture attendance and TPB). Therefore, role-identity is seen as an additional variable to add predictive value to the TPB.

Table 1

*Summary of studies looking at lecture attendance and TPB.*

Study	Relevant variables	Findings
Ajzen (1986)	<ul style="list-style-type: none"> <li>- Attitudes towards lectures</li> <li>- Subjective norms relating to lecture attendance</li> <li>- PBC towards lecture attendance</li> <li>- Lecture attendance intention</li> <li>- Lecture attendance behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- The TPB constructs accounted for 68% of the variance in intention to attend lectures</li> <li>- Intention accounted for 36% of the variance in lecture attendance behaviour</li> </ul>
Prislin and Kovrlja (1992)	<ul style="list-style-type: none"> <li>- TPB variables</li> <li>- High and low self-monitoring as a personality trait</li> </ul>	<ul style="list-style-type: none"> <li>- The TPB variables (attitude, SN and PBC) accounted for 37% of the variance in intention</li> <li>- The addition of high and low self-monitoring increased the variance explained in intention within the model to 42.5%</li> <li>- Additions to the TPB were seen to create higher predictability</li> </ul>



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Randall (1994)	<ul style="list-style-type: none"> <li>- Attitudes towards lectures</li> <li>- Subjective norms relating to lecture attendance</li> <li>- PBC towards lecture attendance</li> <li>- Intention in relation to lecture attendance</li> <li>- Lecture attendance behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- The TPB variables of attitudes, SN and PBC accounted for 39% of variance in intention</li> <li>- The relationship between intention and behaviour was weak</li> <li>- Intention accounted for 14% of variance in lecture attendance behaviour</li> </ul>
Sheeran et al. (1999)	<ul style="list-style-type: none"> <li>- TRA model</li> <li>- Attitudes towards lectures</li> <li>- Subjective norms around lecture attendance</li> <li>- Lecture attendance behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- Attitude was seen to be the strongest predictor of intention to attend lectures</li> <li>- Lecture attendance behaviour is therefore seen to be attitudinally controlled</li> <li>- When controlling for attitudes the prediction of lecture attendance behaviours was seen to be low</li> </ul>
Gump (2006)	<ul style="list-style-type: none"> <li>- Attitudes towards lectures</li> <li>- Subjective norms relating to lecture attendance</li> <li>- PBC towards lecture attendance</li> <li>- Lecture attendance intention</li> <li>- Lecture attendance behaviour</li> </ul>	<ul style="list-style-type: none"> <li>- Attitude was the strongest predictor of intention</li> <li>- The sample saw that increased intention was higher among high performing students</li> <li>- Correlation analysis showed a positive link between intention and behaviour</li> </ul>
Webb et al. (2007)	<ul style="list-style-type: none"> <li>- TPB variables regarding lecture attendance behaviour</li> <li>- Conscientiousness</li> <li>- Openness to experience</li> </ul>	<ul style="list-style-type: none"> <li>- The TPB variables showed a significant predictor of intention to attend lectures</li> <li>- The addition of conscientiousness and openness to experience showed an overall variance explained of 47%</li> </ul>

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### Role (Self) Identity

According to identity theorists (Sparks, 2000; Stryker, 1987), individuals have distinctive elements of their self for each role that they are affiliated to in society. In other words, the self is a collection of identities, which reflect the roles that an individual is affiliated to in a societal structure. This can be known as either role-identity or self-identity within literature, for the purpose of this study the construct will be referred to as role-identity. A role is defined as a set of behavioural tendencies (Hogg, Terry, & White, 1996; Terry, Hogg, & White, 1999). These behavioural tendencies are role congruent behaviours. When an individual engages in role-aligned behaviours, it is seen to validate and confirm the role in question. A link is also seen between role-identity and behavioural intentions (Burke, 1980; McCall & Simmons, 1978; Stryker, 1968; Stryker, 1980; Stryker, 1987; Turner, 1978). Role-identity is also seen to have an innate need to incorporate a set of expectations prescribing behaviours, which others will consider appropriate (Simon, 1997). Callero (1985) argued that role identities create a link between individual action and social structure. Recent studies have also looked at the concept of role-identity within an academic context (Burke & Reitzes, 1981; Ewing & Allen, 2017; Kaplan & Garner, 2017; Lally & Kerr, 2005) where the concept of role-identity in relation to university students emerged. These studies create a foundation for measuring role-identity affiliation for students who are in a university environment in relation to their behavioural intentions. Within the current study, it is seen as an increase in a student's perception of lecture attendance being a part of their role as a student (White, O'Connor & Hamilton, 2011).

### **Role Identity and TPB**

Recent research has highlighted the significance of role-identity in TPB research (Dean et al., 2012; Rise et al., 2010; Terry et al., 1999). Across a variety of behavioural domains, role-identity has been supported as a key addition to the TPB. A study by Terry et al. (1999) predicting recycling intentions and related behaviour amongst 143 community residents investigated the establishment of role-identity within the TPB. It was found that the effect of role-identity was not dependent on past recycling behaviour. The key result of the study showed the impact of role-identity to further account for variance in intentions towards behaviour. The impact of role-identity in relation to the TPB has been examined across various behavioural domains (such as blood donations (Armitage & Conner, 2001), college retention decisions (Biddle, Bank, & Slavings,

1987), voting behaviour (Granberg & Holmberg, 1990), and repeated behaviour (Charng, Piliavin, & Callero, 1988) amongst others). Biddle et al. (1987) conducted a study across a large sample of undergraduate students. Their findings showed that role identity could be noted as a key predictor of intention to stay at university when considering dropout rates amongst undergraduate students. This was found after considering other influential variables such as achievement, background factors and campus experiences. Additionally, Terry et al. (1999) denoted that behaviour has an indirect relationship with role-identity through behavioural intention. Looking into an educational context a study by Cheng and Chu (2013) examining behavioural factors, affecting intentions to enrol in business ethics courses, employed the use of role-identity to further explain behavioural intention and predict the behavioural outcome. Role-identity was looked at as a predictive variable in relation to intention and the behavioural outcome. Results found that role-identity served as a moderator in the relationship between behavioural intentions posited by the TPB and PBC. Additionally, it was seen to play a crucial role in predicting actual behaviour within the model.

### **Role Identity, TPB and Lecture Attendance**

Role-identity has been examined across various behavioural domains in relation to the TPB showing the utility of the construct within the model. Recent studies have adopted the construct specifically into studies examining academic attendance behaviour. Though there is not an abundance of research utilising role-identity within the model in relation to academic attendance, a few key studies can be found. Firstly, a study by Pownall (2012) looked at the construct of student role-identity in relation to lecture attendance and the TPB amongst a group of first-year business students in the United-Kingdom. The study incorporated the TPB model to create a conceptual framework to understand student role-identity as well as group norms. These two variables were measured to further understand subjective norms specifically and furthermore intention. The study looked at how student role-identity can contribute to increasing subjective norms as well as creating a direct relationship to intention. The study found that student role-identity largely contributed to increased engagement and a positive attitude toward lecture attendance. Student role-identity further saw a 19.4% explained variance contribution towards intention. Thus, showing the utility of student-role identity within the TPB model when exploring lecture attendance behaviour.

White, Thomas, Johnston, and Hyde (2008), conducted a study among 77 psychology undergraduate students. The study examined attendance at peer-assisted study sessions for a 1<sup>st</sup>-year statistics course. The efficacy of the TPB was assessed with an addition of a revised measure of role-identity to further predict behavioural intention. The TPB model variables accounted for 53% of the variance of behavioural intentions. After the inclusion of role-identity into a prediction of behavioural intention, an increase in 9% of the variance was found after controlling for the TPB constructs (attitude, subject norm and PBC). Behavioural intentions were also found to be a significant predictor of the behaviour observed, resulting in role-identity being a significant addition to the prediction of the model. A similar study by White, O'Connor and Hamilton (2011), further researched the utility of role-identity in behavioural prediction as well as looking at in-group identity in relation to academic attendance. The study employed a panel design by collecting data at two points. The results found the TPB variables accounted for 56% of variance towards behavioural intention. Role-identity accounted for an additional 15% of variance in behavioural intentions. The result of the study showed the value of role-identity in behavioural prediction, adding further corroboration to the White et al. (2008) study examining peer-assisted study session attendance. Thus, the utility of role-identity and the need to further examine the construct to validate the generalisability of the results found in the above studies is seen.

## **Conclusion**

Therefore, the present study aims to further explore the variance explained through TPB constructs in relation to lecture attendance with the addition of role-identity. Studies applying TPB constructs in relation to lecture attendance behaviour have focused on the constructs of attitudes and subjective norms. Therefore, the present study aims to apply the theory in its entirety by also looking at the moderating effect of ABC between intention and behaviour. This moderating effect is seen to be significant in previous research but has not been explored when looking at lecture attendance (Fishbein, & Ajzen, 2010; Martinez, & Lewis, 2016; Rosenthal, 2018). Most research found in relation to lecture attendance is also focused in contexts abroad and there is limited research within a South African context. There is a further limitation in research predicting lecture attendance using the TPB and even less with the addition of role-identity as an additional predictor. Therefore, this study will investigate whether the TPB model in its entirety can be applied to

predict lecture attendance in a South African context and explore the function of role-identity within the model.

### **Hypotheses:**

**H1a:** The strength of a student's intention to attend lectures is positively related to attitude towards lecture attendance behaviour.

**H1b:** A favourable attitude towards lecture attendance behaviour will be a significant predictor of intention towards lecture attendance behaviour.

**H2a:** The strength of a student's intention to attend lectures is positively related to subjective norms towards lecture attendance behaviour.

**H2b:** Favourable subjective norms towards lecture attendance behaviour will be a significant predictor of intention towards lecture attendance behaviour.

**H3a:** The strength of a student's intention to attend lectures is positively related to perceived behavioural control towards lecture attendance behaviour.

**H3b:** Perceived behavioural control over attending lectures will be a significant predictor of intention towards lecture attendance behaviour.

**H4a:** Intention to attend lectures will be positively related to actual lecture attendance behaviour.

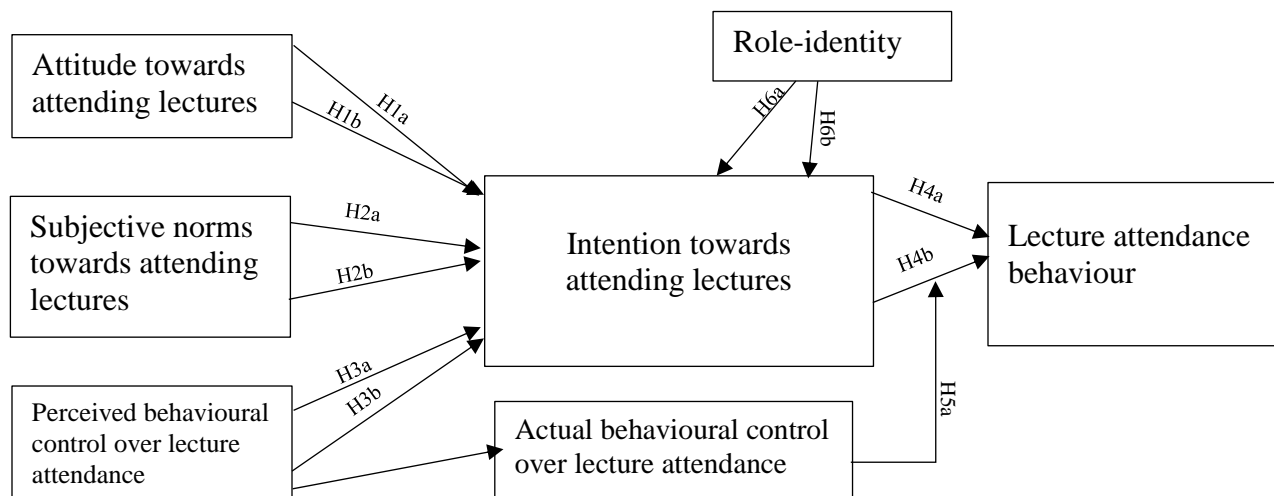
**H4b:** Intention to attend lectures will be a significant predictor of lecture attendance behaviour.

**H5a:** Actual behavioural control has a moderating effect on the relationship between intention to attend lectures and lecture attendance behaviour.

**H6a:** The strength of a student's intention to attend lectures is positively related to a student's role-identity.

**H6b:** A Student's role identity will significantly predict intention towards lecture attendance behaviour.

Figure 3 below provides a conceptual framework for the hypotheses being tested



*Figure 3. A conceptual framework of the hypotheses being tested*

## **Method**

This section aims to describe the method that was employed within the study when applying the Theory of Planned Behaviour (TPB) to examine the factors which may aid in predicting lecture attendance amongst university students. There are seven sections in this chapter. The sections describe the research design utilised, the sampling technique employed, the participants of the study, information on the measures used, ethical considerations, the procedure which was followed and the statistical analysis which was utilised within the study.

### **Research design**

A cross-sectional descriptive research design was implemented to test a priori hypotheses. The study hypotheses were derived from the theory and guided the research process which aimed to describe how the variables are related and not to draw causal conclusions. The data collected is quantitative in nature and was collected utilising a self-report questionnaire. The study is categorised as cross-sectional as it aimed to gather quantitative data at a specific point in time from a segment of the population, due to time and cost constraints. (Hair, Babin, Money, & Samouel, 2003).

### **Sampling**

A non-probability, purposive sampling method was utilised since the study aimed to focus on a specific cohort of the population of students from two specific undergraduate courses at the University of Cape Town. The current approach allowed for the specific requirements of sample composition to be met. An initial sample group was created by distributing hard copy questionnaires at the lectures relevant to the courses. Thereafter, snowball sampling was employed whereby the existing participants (who were approached and consented to participate) were asked to recruit new participants who also met the criteria, by making use of their friend networks (Browne, 2005). 200 hard copy questionnaires were distributed over various lectures relating to the courses (100 for each of the two courses), however, only 115 questionnaires were fully completed. An online questionnaire was also created using Qualtrics and a link was initially

distributed on the course administrative sites. After one week the response rate was low, and a second reminder was sent out. A total of 80 responses were collected, however, 21 of these responses were removed due to non-completion of the questionnaire.

## Participants

The participants within this study consisted of undergraduate students from two specific courses at the University of Cape Town namely; a Mathematics first-year course (Course code: MAM1016S) and an Organisational Psychology first-year course (Course code: BUS1007S). The final study sample ( $N = 169$ ) consisted of 81 (47.9%) participants who were registered for the MAM1016S course and 88 (52.1%) participants who were registered for the BUS1007S course (See Table 2 and 3 below for demographic details outlined for each course). The total sample participants' ages ranged from 18 to 41 years ( $M = 19.57$ ;  $SD = 2.308$ ). The socio-economic status of the participants was categorised into five categories with the following frequencies; 9 participants selecting less than enough (5.3%), 77 selecting enough (45.6%), 42 selecting more than enough (24.9%), 34 selecting resourced (20.1%) and 7 selecting affluent (4.1%). The sample had skewed gender statistics with 129 females (76.3%) and 38 males (22.5%). The racial distribution was as follows; predominantly Coloured (30.2%), followed closely by African (29%), White (22.5%), Indian (6.5%) and Asian (2.4%) and 16 participants selected prefer not to answer (9.5%).

Table 2

### *Demographic characteristics for MAM1016S*

Demographic characteristic	Category	%	<i>N</i>
<b>Sample proportion</b>	MAM1016S	47.9	81
<b>Race</b>	African	32.1	26
	Coloured	39.5	32
	Indian	3.7	3
	Asian	2.5	2
	White	13.6	11
	Prefer not to answer	8.6	7



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<b>Gender</b>	Female	80.2	65
	Male	18.5	15
<b>Socio-economic status</b>	Less than enough	8.6	7
	Enough	54.3	44
	More than enough	23.5	19
	Resourced	12.3	10
	Affluent	1.2	1
<b>Age</b>	18	28.4	23
	19	44.4	36
	20	18.5	15
	21	6.2	5
	23	1.2	1
	31	1.2	1

Table 3

*Demographic characteristics for BUS1007S*

<b>Demographic characteristic</b>	<b>Category</b>	<b>%</b>	<b>N</b>
<b>Sample</b>	BUS1007S	52.1	88
<b>Race</b>	African	26.1	23
	Coloured	21.6	19
	Indian	9.1	8
	Asian	2.3	2
	White	30.7	27
	Prefer not to answer	10.2	9
<b>Gender</b>	Female	72.7	64
	Male	26.1	23
<b>Socio-economic status</b>	Less than enough	2.3	2
	Enough	37.5	33
	More than enough	26.1	23
	Resourced	27.3	24
	Affluent	6.8	6

<b>Age</b>	18	10.2	9
	19	46.6	41
	20	25	22
	21	13.6	12
	22	2.3	2
	31	1.1	1
	41	1.1	1

## Measures

The dependent variable within the study was the target behaviour of lecture attendance amongst the undergraduate students of both courses which were selected (MAM1016S and BUS1007S).

**Target behaviour.** Lecture attendance was measured for both courses by the course administrators. MAM1016S had 4 lectures a week with one tutorial per week (the attendance for the tutorial was not included as part of lecture attendance measured). The lecture attendance for MAM1016S was measured over a 4-week period resulting in a total of 28 lectures. Attendance was taken by the lecturer passing a register around for students to write their student number and sign and would subsequently be inputted into the course administrative site (VULA) to monitor attendance of all students. Lectures are compulsory for MAM1016S and students would need to attend at least 75% of all lectures for the semester. BUS1007S had 3 lectures per week. Lecture attendance for the course was measured over a 3-week period resulting in a total of 7 lectures (2 weeks only had 2 lectures within the week where attendance was taken due to a guest lecture where attendance was not taken and the occurrence of a public holiday). Attendance was taken by the lecturer passing around a page where students would write their name, student number and sign. Each participant that consented to participate in the study was asked for their student number when completing the questionnaire. These student numbers were used to link responses of students to their corresponding lecture attendance measured. Lecture attendance for both courses was

measured numerically with the number of lectures each participant attended being recorded and computed into a percentage score.

The independent variables within the study were the variables that are part of the Theory of Planned Behaviour model (Attitudes, subjective norms, PBC, ABC and intention). Role-identity was also added as an independent variable outside of the Theory of Planned Behaviour (TPB) model. A 45-item questionnaire was compiled with 40 items measuring the TPB variables and 5 items measuring role-identity (See Appendix A for full questionnaire administered). To construct the scales for the TPB model, brief informal interviews were conducted with students from each of the courses. Five students from the MAM1016S course were interviewed and seven students from the BUS1007S course (See Appendix B for interview guideline). The interviews were held to aid in further understanding the normative, control and behavioural beliefs of the students within the sample. Ajzen's (2013) guidelines were followed to construct each scale for the TPB variables. The study aimed to assess the influence of the TPB constructs, where the direct measures outlined below for each TPB variable was used to test the hypotheses. The indirect measures outlined below for each TPB variable was used for correlation analyses between the direct and indirect measures for descriptive purposes.

### **Attitudes.**

**Direct measure.** The construction of three items was used to measure attitudes directly. Each item was scored on differing seven-point Likert-type semantic differentiation response scales but was identical in questioning. All three items followed a single stem and stated the following "For me to attend lectures until the end of this semester on a regular basis is". However, item 1 was rated (1 = *extremely worthless* to 7 = *extremely valuable*), item 2 (1 = *extremely bad* to 7 = *extremely good*) and item 3 (1 = *unacceptable* to 7 = *acceptable*).

**Indirect measure.** The outcome evaluations and behavioural beliefs measures were measured to create indirect scores for attitude. Outcome evaluations consisted of five items. An example item is "Getting the opportunity to interact with the lecturers and other students is", which was scored on a seven-point Likert-type semantic differentiation response scale (1 = *extremely bad*

to 7 = *extremely good*). Behavioural beliefs were scored on a seven-point Likert-type semantic differentiation response scale (1 = *strongly disagree* to 7 = *strongly agree*). An example item is “Attending lectures until the end of the semester takes time away from other activities I would prefer to do”. To create this belief-based index for attitudes, outcome evaluation scores were multiplied by behavioural belief scores for each item pair in both scales (five-item pairs) then summed and divided by the total number of item pairs. The following equation was used:

$$\text{Formula 1.1} \quad A = \frac{(a \times f) + (b \times g) + (c \times h) + (d \times i) + (e \times j)}{n}$$

Where      A = Total attitude score for the indirect measure  
               a, b, c, d and e are the scores each of the five behavioural belief items.  
               f, g, h, i and j are the scores for each of the five outcome evaluation items.  
               n = number of item pairs (e.g. above = 5)

### **Subjective norms.**

**Direct measure.** One item pertaining to each referent group (lecturers, parents, close friends and the individual/group who is financially supporting my studies) were created to make up an overall four item composite scale. Responses to these items such as “My parents think I should attend lectures until the end of this semester on a regular basis” was scored on a seven-point Likert-type semantic differentiation scale ranging from 1(*strongly disagree*) to 7 (*strongly agree*).

**Indirect measure.** One item pertaining to each referent group was created to measure motivation to comply and normative beliefs separately. Motivation to comply therefore consisted of four items where each item such as the following example item “Generally speaking, I do what my parents think I should do” was measured on a seven-point Likert-type semantic differentiation scale ranging from 1 (*not at all*) to 7 (*very much*). Normative beliefs made up of four items was scored on a seven-point Likert-type semantic differentiation scale (1 = *strongly disagree* to 7 = *strongly agree*). An example item is “The opinion of my parents is important to me”. To create

this belief-based index for subjective norms, motivation to comply scores were multiplied by normative belief scores (four item pairs), then summed and divided by the total number of item pairs. The following formula was utilised:

$$\text{Formula 1.2} \quad N = \frac{(a + e) + (b + f) + (c + g) + (d + h)}{n}$$

Where  $N$  = Total subjective norm score for the indirect measure.  
 $a, b, c$  and  $d$  = normative belief scores for each of the four items  
 $e, f, g$  and  $h$  = motivation to comply scores for each of the four items.  
 $n$  = number of item pairs (e.g. above = 4)

### **Perceived behavioural control.**

**Direct measure.** Three items were created to measure PBC. Items were rated on a seven-point Likert-type semantic differentiation scale. Item 1 was measured on a range from 1 (*extremely difficult*) to (*extremely easy*). Item two and three were measured on a range from 1 (*strongly disagree*) to 7 (*strongly agree*).

**Indirect measure.** Self-efficacy and controllability scores were measured to create a belief-based index for PBC. Self-efficacy consisted of three items. An example item is “If I encountered unanticipated events that placed demands on my time, it would make it more difficult for me to attend lectures until the end of the semester on a regular basis” was scored on a seven-point Likert-type semantic differentiation response scale (1 = *strongly disagree* to 7 = *strongly agree*). Controllability scores were rated on a seven-point Likert-type semantic differentiation response scale (1 = *strongly disagree* to 7 = *strongly agree*) and consisted of three items. An example item is “How often do you encounter unanticipated events that place demands on your time?”. The following equation was used to create the belief-based index for PBC:

$$\text{Formula 1.3} \quad \text{PBC} = \frac{(a \times d) + (b \times e) + (c \times f)}{n}$$

Where            PBC = total perceived behavioural control score.  
                    a, b and c are scores for each of the three items for self-efficacy.  
                    d, e and f are scores for controllability for each of the three items.  
                     $n$  = number of item pairs (e.g. above = 3)

**Actual behavioural control.** Three items were constructed to measure ABC. Items were rated on a seven-point Likert-type semantic differentiation scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*). An example item is “The current resources available to me such as transport (Jammie shuttle/car etc.) make it easier for me to attend lectures until the end of the semester on a regular basis”.

**Intention.** Following the procedure outlined by Francis et al. (2004), intentions can be measured in three ways. The first way is to use a one item intention performance procedure where you would simply ask a participant to state how many lectures do you expect to attend. Intention can also be measured through an intention simulation procedure where 10 scenarios related to the behaviour are outlined and respondents reply either Yes or No to each one. Lastly, intention can be measured through a generalised intention procedure. For the purpose of this study, the last method was utilised as bias may come into play through using the first self-report measure of intention performance and the second procedure of intention simulation is limited within the construct of the behaviour. Therefore, the generalised intention procedure was used where three items were constructed. The three-item scale was rated on a seven-point Likert-type semantic differentiation scale ranging from 1 (*extremely unlikely*) to 7 (*extremely likely*). An example item is “How likely are you to attend lectures until the end of this semester on a regular basis”.

**Role-identity.** A five-item scale was used to measure role-identity. An adapted version of the scale constructed by White et al., (2008) was created (See Appendix C for an adapted version of the scale). An example item is “For me, attending every lecture this semester will not assist in fulfilling my role as a student enrolled at UCT”. The original scale was used to assess the extent to which students' felt importance towards attending peer-assisted study sessions for 1<sup>st</sup>-year

statistics. The averaged five items created a role-identity scale with a reliability of .86 (See Appendix D for original scale).

The adapted five-item scale used in this study based on the original scale was rated on a seven-point Likert-type semantic differentiation scale ranging from 1 (*strongly disagree*) to 7 (*strongly agree*) except for the first item (a) “To what extent do you think that attending lectures this semester is a significant part of your role as a student enrolled at UCT?”, which was scored on a Likert-type semantic differentiation scale ranging from 1 (*very important*) to 7 (*not very important*). Items 3 and 4 were negatively worded compared to the rest of the items and were therefore recoded before analysis.

**Demographic characteristics.** Single items were constructed to measure the following demographic characteristics: the course the student is registered for, student numbers, age, gender, race and socio-economic status. These demographic characteristics were chosen to provide further insight into the characteristics of the sample.

## **Ethical Considerations**

An approval process was followed to receive approval from the University of Cape Town’s Commerce Faculty Ethics in Research Committee. Thereafter, an approval process was followed to receive approval from The Department of Student Affairs (DSA) at UCT to ensure students may be used as participants within the study. The research guidelines of the American Psychological Association were followed throughout each step. The participating students were assured of confidentiality and anonymity. Each participant was informed of the purpose of the study and how the information they provide will be utilised. Participants were not forced to participate and had to provide consent. No individual was, prejudiced, harmed or deceived throughout the process of the study. Each consenting participant had the opportunity to withdraw from the study at any point in the research process (See Appendix E for informed consent letter).

## **Procedure**

Once ethics approval was received from the University of Cape Town's Commerce Faculty Ethics in Research Committee and from the Department of Student Affairs (DSA), the course convenors for each course were approached to receive approval to utilise lecture attendance results from the courses and to communicate to the student's over the course administrative site. The course convenors were also asked whether lecture time could be used to approach students and hand out questionnaires. The course convenors for both courses granted approval to conduct the research. A 10-minute time-frame was given in the first lecture slot of both courses to approach students. All students from both courses were informed of the study and given an outline and the details of the researcher should they wish to participate in the first stage of the study which was brief informal interviews. An announcement was also sent out of the same nature on the course administrative site to reach out to students who may not have attended the lectures.

Thereafter, responses were received, and interviews were conducted. After the interview responses were analysed the questionnaire was compiled. A hard copy version and an online version via the electronic platform Qualtrics were created. An announcement with the link of the survey was sent out on both course-administrative sites at the end of the week. The response rate was low two days after initiation. Therefore, hard-copies were distributed at lectures for both courses at the next scheduled lectures. Students were asked to pass the link on to anyone they knew who were registered for the course but may not have been present. The questionnaire had clear instructions and had a thank you message at the end once completed. The questionnaire took approximately 10 minutes to complete. After handing out hard copies of the questionnaire a final announcement was sent out on both course-administrative sites encouraging students to complete the survey.

### **Statistical analysis.**

The data that was collected was analysed using IBM Statistical Package for Social Sciences (SPSS) version 25. The data that was collected from the online questionnaire was imported into SPSS directly from the Qualtrics sever. The data collected from hard-copy questionnaires were manually inputted directly into SPSS. The data was then cleaned, coded and utilised for the analyses within the study. Statistica 13.3 was utilised to run the Confirmatory Factor Analysis to



test varying models in relation to the TPB variables. Each scale was also assessed using Exploratory Factor Analysis using principal axis factoring. Thereafter, the reliability of each scale was determined by measuring internal consistency using Cronbach's coefficient alpha ( $\alpha$ ). Descriptive statistics were then determined using the final scale scores before the hypotheses were tested. Correlational, moderation and regression analyses were utilised to test the hypotheses. Finally, ANOVA was utilised to determine if differences could be found amongst measured variables across specific factors.

## **Results**

The following chapter aims to outline the statistical results related to the enquiries the current study is aiming to explore. This chapter is divided into seven sections. The first section aims to assess the variability of the underlying dimensions of each scale relating to the TPB's constructs utilising Confirmatory Factor Analysis (CFA). Exploratory Factor Analysis (EFA) was run as an additional analysis for the TPB measures (See Appendix F for results) as well as for role-identity and reported below. Section two outlines the results of the reliability analysis of the measure. Section three outlines the descriptive statistics which were measured. Section four outlines the results of the correlation analysis to test hypotheses and analysis between the direct and indirect measures. Section five aims to test the moderating effect of ABC by running a moderation analysis using PROCESS. Section six outlines the analyses relating to testing the remaining hypotheses using simple linear regression and hierarchical multiple regression. The final section outlines the results of ANOVA analysis. This section will also summarise the findings of the study in relation to the hypotheses.

### **Confirmatory Factor Analysis**

Confirmatory Factor Analysis (CFA), is a multivariate statistical technique which is utilised to verify the factor structure of a set of observed variables. CFA allows the researcher the ability to specify the number of factors required within data (Hu & Bentler, 1999). It also allows the researcher to relate the measured variables to chosen latent variables. The following assumptions of CFA need to be determined before analysis can be run. Firstly, the sample needs to be attained randomly. This was achieved as participants were selected from a specific group (the two courses) using non-probability sampling. Secondly, multivariate normality needs to be determined. This was determined by creating P-Plots where the data relating to each variable was observed to be clustered along the diagonal of the graph (Hair et al., 2006). Thirdly, the sufficiency of the sample size needs to be determined. Research suggests a sample of  $n > 200$  when conducting CFA.

The current study however only has a sample size of  $n = 169$ . Though a sample greater than 200 is suggested, it is based on a participant to variable ratio of 1/10 where each variable in the model must have 10 relating participants and a sample of 200, therefore, provides room for a model to have 20 variables (Myers, Ahn, & Jin, 2011). The current model being tested only has 4 variables under analysis, therefore, using the ratio of having 10 participants for every variable within the model, the current model would require a sample size greater than 40. Therefore, the current sample of  $n = 169$  meets sampling adequacy parameters.

Lastly, a priori model needs to be determined and specified based on relating theory and research (Hair et al., 2006). This was created based on the TPB research and theory itself where attitudes, subjective norms and PBC are seen to be related to intention. The three variables of attitude, subjective norms and PBC are also assumed to correlate as they relate to intention but should create three separate factors (See Figure 4 below for model used within CFA analysis).

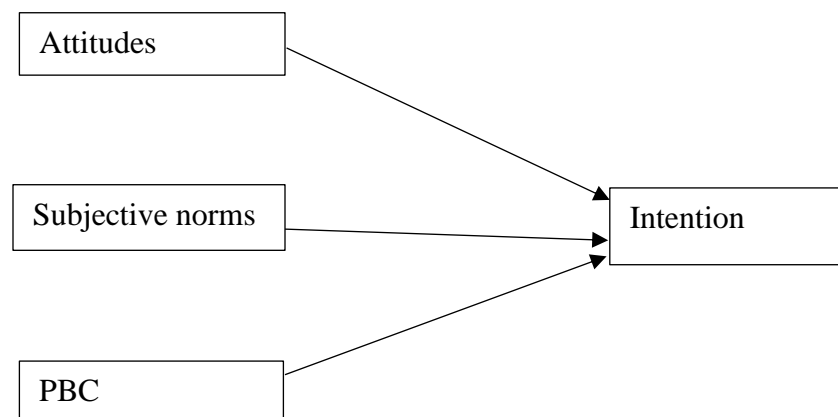


Figure 4: *Model tested in CFA analysis*

CFA was run to test whether the three variables utilised to measure the level of intention of attitudes (three items), subjective norms (four items) and PBC (three items) can be distinguished from one another. Model fit was determined by examining the chi-square value, the goodness of fit index (GFI), the comparative fit index (CFI), the normed fit index (NFI) and the root mean square error of approximation (RMSEA). Varying models were compared to determine which

model generates the best fit statistics. (See Table 4 below for overall fit indices for varying models analysed).

Table 4

*Overall fit indices for the varying models analysed*

Model	X <sup>2</sup>	DF	GFI	CFI	NFI	RMSEA	90% CI	
							Low	High
M1: 1 Factor orthogonal	233.01	35	0.75	0.70	0.67	0.21	0.19	0.23
<u>Two-factor</u>								
M2: ATT+PBC & SN	113.90	35	0.87	0.88	0.84	0.12	0.10	0.15
M3: ATT+SN & PBC	288.66	35	0.73	0.61	0.59	0.24	0.2	0.22
M4: SN+PBC & ATT	224.75	35	0.78	0.71	0.68	0.19	0.16	0.21
<u>Three factors</u>								
M5: Three-factor oblique	58.56	32	0.94	0.96	0.92	0.07	0.04	0.10

As expected, the three-factor model (M5) saw the best model fit (Ajzen, 2002; Salleh & Albion, 2004; Hagger & Chatzisarantis, 2005). Comparison of the model to the varying models tested saw a significant increase in the strength of the model fit statistics. Firstly, looking at the chi-square value which tests the difference between the observed and expected covariance matrices. When a value is closer to zero it indicates a minimal difference between the two matrices (Hair et al., 2006). The lowest value closest to 0 was found in model M5 (three-factor oblique model) followed by M2 (Two-factor model – ATT+PBC & SN). Secondly, the GFI value looks at comparing the model in question with the observed covariance matrix. A value above 0.90 indicates an acceptable model fit (Hair et al., 2006). Only model M5 (three-factor oblique model) showed a value above 0.90 of 0.94. Thirdly, the CFI value determines the discrepancy function adjusted for sample size. Similarly, to the GFI value, a value above 0.90 indicates an acceptable model fit (Hair et al., 2006). It was seen again that only model M5 (three-factor oblique model) saw a value above 0.90 which equalled 0.96.

Next, the NFI value was looked at which determines the discrepancies between the chi-square value of the model in question against the chi-square value of the baseline model (the null model where the worst fit model is determined). A value above 0.95 is seen as indicating a good

model fit (Hair et al., 2006). Though none of the models showed an NFI above 0.95, model M5 (three-factor oblique model) showed a value significantly close of 0.92, as well as the highest value out of all the models tested. Finally, the RMSEA value shows the residual relation within the model. The RMSEA value lies between 0 and 1, where a value close to 0 and less than 0.08 is seen to indicate better model fit (Hu & Bentler, 1999; Hair et al., 2006).). Only model M5 (three-factor oblique model) saw a value below 0.08, where a value of 0.07 was seen. Overall, showing that in comparison to varying models, model M5 (three-factor oblique model) saw the best model fit statistics meeting statistical criteria (Hair et al., 2006). Therefore, attitudes, subjective norms and PBC are seen to be three separate factors which correlate with one another.

### Exploratory Factor Analysis

**Role-identity scale.** The factor analysis revealed one significant factor. The resultant factor had an eigenvalue  $>.10$  which accounted for 56.886% of the variance (eigenvalue = 2.844). Item 5 had the most significant factor loading of .848 and item 4 had the least significant factor loading of .407. However, it was still above the cut off outlined of .30. Table 5 below reflects the factor loadings of the items onto the single factor which was identified.

Table 5

#### *Role-identity scale*

		<b>RID</b>
<b>RID1</b>	To what extent do you think that attending lectures until the end of this semester on a regular basis is a significant part of your role as a student enrolled at UCT?	.805
<b>RID2</b>	Generally speaking, I think it is appropriate for me as a student enrolled as UCT to attend very lecture this semester.	.811
<b>RID3</b>	Thinking of myself as a student enrolled at UCT, it is not important for me to attend every lecture until the end of this semester	.486
<b>RID4</b>	For me, attending every lecture this semester will not assist in fulfilling my role as a student enrolled at UCT	.407
<b>RID5</b>	As a student enrolled at UCT, I think it is important for me to attend every lecture	.848
Eigenvalue		2.844

Individual total variance	56.886%
Cumulative total variance	56.886%

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*Note. N=169 after casewise deletion of missing data. Extraction: Principal axis. RID = Role-identity.*

### **Reliability analysis.**

To run reliability analysis Cronbach's coefficient alpha ( $\alpha$ ) was utilised to measure the internal consistency of each scale. Reliability analysis was run on all factors which emerged after CFA and EFA analysis. Cronbach's alpha values were all  $>.70$  except for the ABC scale ( $\alpha = .652$ ). Though the inter-item total correlations were above  $.30$  for the ABC scale (ranging from  $.419$  to  $.493$ ) the Cronbach alpha did not make the  $.70$  cut-off and therefore it is suggested to keep the low reliability result in mind when interpreting results in further analysis which includes the scale (Field, 2013; Nunnally, 1978). Though the ABC scale did not make the  $.70$  cut-off exactly the result is above  $.65$  and decimally close to the cut-off mark and met inter-item total correlation standards. Thus, analysis of the scale was run. Cronbach alpha levels above  $.70$  are deemed to have satisfactory internal consistency where higher values indicate increased consistency between the items within the scale which all five other scales met (Hair et al., 2006). The Cronbach's alpha values which emerged for the remaining five scales ranged from  $.744$  to  $.913$  (All Alpha coefficients can be found in the correlation tables below). All inter-item total correlations for each item in the remaining five scales were above  $.30$ . Therefore, for the remaining five scales all items were retained, and the reliability of each scale was deemed satisfactory (Field, 2013).

### **Descriptive statistics**

Descriptive statistics are utilised to gain a further understanding of the data gathered. They provide a depiction of how the scores relating to each variable are distributed within the sample. The following descriptive statistics were analysed; minimum scores (*min*), maximum scores (*max*), means (*M*), standard deviations (*SD*), skewness, kurtosis and standard error around the mean (*SE*) (Table 6 provides a summary of these statistics).

**TPB variables.** The reported mean scores for attitude ( $M = 5.51$ ), subjective norms ( $M = 5.83$ ), PBC ( $M = 5.0$ ) and ABC ( $M = 5.12$ ) were positive with means  $>5$  above the midpoint on the seven-point scale utilised for all four measures. This indicates that the sample is seen to have relatively positive attitudes, subjective norms, PBC and ABC over lecture attendance.

**Role-identity.** Reported role-identity scores also showed to be positive with a mean  $<5$  on a seven-point scale which = 4.57 which is slightly above the midpoint of the scale. Though role-identity was seen to have a slightly lower mean than the other variables within the study, the standard deviation of the scores relating to role-identity were seen to be the lowest at .76 meaning scores were relatively clustered together meaning the mean has more weight in its representation of the sample.

**Intention to attend lectures and actual attendance.** Intention to attend lectures was seen to have a positive distribution of scores ( $N = 169$ ,  $M = 5.29$ ,  $SD = 1.39$ ). The minimum score seen was 1.00 and the highest being 7.00 both of which are at the extremes of the seven-point scale. The mean of 5.29 is above 5 creating a positive propensity of the sample to have a high intention to attend lectures. Intention scores to attend lectures were negatively skewed ( $skewness = -.80$ ) meaning the data is moderately skewed left on a normal distribution. Skewness is seen to occur in the third moment of distribution whereas kurtosis is seen to occur in the fourth moment, meaning outliers within a sample have a greater effect in kurtosis than skewness. Kurtosis can be interpreted in terms of the peak of the data in relation to a normal distribution curve. The kurtosis score for intention was .036 meaning the data is classified as platykurtic where the distribution of the data is flat as the central peak is lower and broader in relation to a normal distribution curve (Field, 2013).

Attendance was analysed as a percentage as the two courses had different numbers of lectures per week. Overall attendance was seen to be positive ( $N = 169$ ,  $M = 60.53$ ,  $SD = 29.76$ ). Therefore, as intention is seen to be positive the relating actual attendance of participants was also seen to be positive. The skewness and kurtosis scores for actual attendance were relatively similar ( $skewness = -.64$ ,  $kurtosis = -.68$ ). These results show that the distribution of the scores for actual attendance firstly show that the skewness is approximately symmetric and close to a normal

distribution. The kurtosis score also shows a lower and broader peak in relation to a normal distribution curve. Overall, showing that actual attendance and intention have similar distribution statistics.

Table 6

*Descriptive statistics for each variable scale*

<i>Variables</i>	<i>SE</i>	<i>min</i>	<i>max</i>	<i>Skewness</i>	<i>Kurtosis</i>
Attitudes	.10	1.33	7.0	-.94	.44
Subjective norms	.08	1.0	7.0	-1.28	2.28
PBC	.11	1.0	7.0	-.66	-.12
ABC	.09	1.0	7.0	-.59	.24
Role-identity	.06	1.4	7.0	.01	2.64
Intention	.11	1.0	7.0	-.80	0.4
Actual attendance	2.29%	0%	100%	-.64	-.68

*Note.* *SE* = standard error around the mean, *min* = minimum, *max* = maximum.

## Correlation analysis

Correlation analysis was assessed using Pearson product momentum correlation. Pearson correlation was utilised to analyse the relationships between the variables to test hypotheses 1a, 2a, 3a, 4a and 6a (See Appendix G Figure 5 for a model summary of the correlation analysis run). Intention was first assessed in relation to the TPB variables (Attitudes *H1a*, Subjective Norms *H2a* and PBC *H3a*). Thereafter, Role-identity and actual lecture attendance were assessed in relation to intention to test hypotheses 4a and 6a. During the analysis p values were categorised as follows: \* $p \leq .05$ , \*\* $p \leq .01$ , \*\*\* $p \leq 0.001$ . Further to the hypotheses testing, correlation analysis was also



run to determine the extent to which the direct TPB measures were related to the indirect TPB measures. Though the indirect measures are not directly associated with testing the hypotheses within the study, they do however hold an assumption in which they hold weight against the direct measures. Testing this relationship will allow for an understanding of the assumption that the direct measures are related to the indirect measures. Results were interpreted using Cohen's conventions where a correlation coefficient .10 is seen to represent a small or weak correlation, a coefficient of .30 is seen to represent a moderate association and a coefficient of .50 is seen to represent a strong correlation (Cohen, 1988).

**TPB variables and intention.** Significant positive relationships were found between attitudes, subjective norms and PBC in relation to intention. The strongest relationship was found between attitude and intention ( $r = .565, p < 0.01$ ), which saw a positive relationship in support of hypothesis 1a. This result represents a strong correlation. The results for hypothesis 2a were also supported ( $r = .313, p < 0.01$ ), showing a moderate positive relationship between subjective norms and intention. Finally, PBC and intention showed a moderate positive relationship ( $r = .433, p < 0.01$ ) in support for hypothesis 3a. See Table 7 below for the correlation matrix related to the TPB variables.

Table 7

*Correlation Matrix for components of the Theory of Planned Behaviour*

<i>Variables</i>	<i>M</i>	<i>SD</i>	<i>1.1</i>	<i>1.2</i>	<i>1.3</i>	<i>2</i>
1.1 ATT	5.50	1.30	(.852)			
1.2 SN	5.83	1.06	.345**	(.744)		
1.3 PBC	5.0	1.42	.590**	.329**	(.750)	
2. INT	5.29	1.39	.565**	.313**	.433**	(.913)

*Note.*  $N = 169$ . \*\*  $p < 0.01$ ,  $M$  = mean,  $SD$  = standard deviation, ATT = Attitudes, SN = Subjective Norms, PBC = Perceived behavioural control, INT = Intention; Scale reliabilities are reported on the diagonal.

**Role-identity, actual attendance and intention.** Correlation analysis was also run between role-identity and intention as well as intention and actual attendance to test both hypotheses 4a and 6a. A significant positive relationship was found between role-identity and intention ( $r = .332, p < 0.01$ ), this is in support of hypothesis 4a. A significant positive relationship was also found between intention and actual attendance ( $r = .301, p < 0.01$ ), which is in support of hypothesis 6a. Both of these results showed moderate correlations (See Table 8 below for correlation matrix between role-identity, actual attendance and intention).

Table 8

*Correlation Matrix between role-identity, actual attendance and intention*

<i>Variables</i>	<i>M</i>	<i>SD</i>	<i>1.1</i>	<i>1.2</i>	<i>2</i>
1.1 RID	4.57	.76	(.788)		
1.2 ACTA	60.53%	29.76%	.095	(.652)	
2. INT	5.29	1.39	.332**	.301**	(.913)

*Note.*  $N = 169$ . \*\*  $p < 0.01$ ,  $M$  = mean,  $SD$  = standard deviation, RID = Role-identity, ACTA = Actual attendance, INT = Intention; Scale reliabilities are reported on the diagonal.

**Indirect and direct measures.** The indirect measures for attitude, subjective norms and PBC were correlated to their relating direct measures to deduce whether they meet the theory's assumption that the direct measure correlates to the indirect measure for each variable. The indirect measure for attitude between behavioural beliefs and outcome evaluations showed a significant positive relationship ( $r = .52, p < 0.01$ ) to the direct measure for attitude. Similarly, the indirect measure for subjective norms (normative beliefs and motivation to comply) was significantly positively related to the direct measure for subject norms ( $r = .28, p < 0.01$ ). Therefore, the indirect assumptions for both attitude and subjective norms can be seen to be related to the direct measure. Finally, the indirect measure for PBC (the function of self-efficacy and controllability) showed a negative significant relationship ( $r = -.43, p < 0.01$ ), which shows that as one measure increases the other decreases and vice versa. This indicates that as control beliefs such as feeling that one

cannot attend lectures due to illness or unforeseen circumstances increased then PBC decreased as a direct measure.

### Moderation analysis using PROCESS

To investigate whether the relationship between intention to attend lectures and lecture attendance behaviour is moderated by ABC, a moderated multiple regression analysis was run. This analysis was run to ultimately test hypothesis 5a (See Figure 6 below for conceptual diagram). This analysis was run using the plug-in PROCESS v. 3.1 by Andrew. F. Hayes through SPSS.

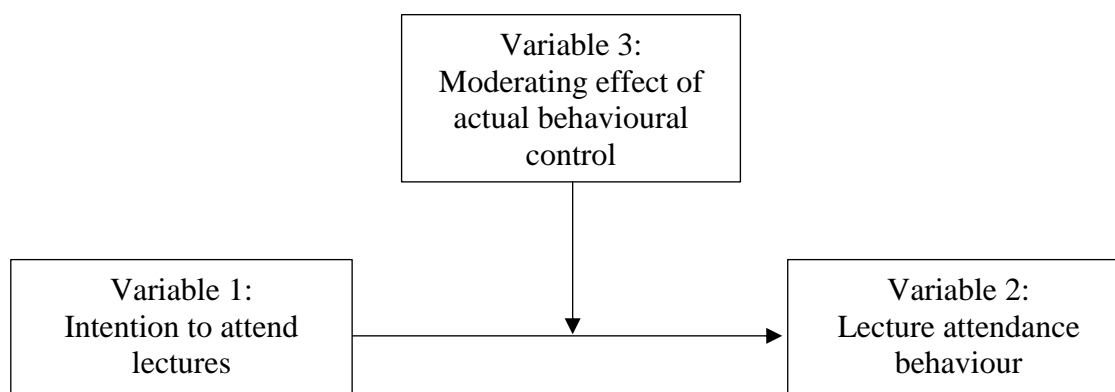


Figure 6: *Conceptual diagram of the model used for moderation analysis.*

The overall model is seen to be significant ( $R = .3185$ ,  $R^2 = .1015$ ,  $F_{165}=6.2098$ ,  $p < .000$ ). ABC is seen to not have a significant moderating effect on the model ( $R^2 = .0012$ ,  $F_{165}=.2215$ ,  $p = .6385$ ). When the intention to attend lectures and ABC are considered in their effect on lecture attendance behaviour, it is seen that ABC over lecture attendance does not influence the effect that intention to attend lectures has on lecture attendance behaviour ( $\beta = .0620$ ,  $t = .4706$ ,  $p = .6385$ ). Furthermore, the 95% bootstrap confidence intervals related to the above results were computed to determine the indirect effects at the 2.5<sup>th</sup> and 97.5<sup>th</sup> percentile. The confidence intervals for the moderation analysis ranged from  $-.2166$  to  $.2479$ . This further shows the insignificant results found in the moderation analysis. Overall, the relationship seen between intention to attend lectures and lecture attendance behaviour is seen to not be moderated by ABC meaning that as ABC changes

(increases/decreases) it has no influence on the relationship between intention to attend lectures and lecture attendance behaviour. Therefore, hypothesis 5a is not supported.

## Regression analysis

Hierarchical multiple regression was run to test hypotheses 1b, 2b, 3b, and 6b. Following the theoretical background of the TPB the following independent variables; attitude, subjective norms and PBC were inputted into the first step of the model with intention as the dependent variable. Thereafter, in the second step role-identity was inputted as an additional predictor within the model to test its predictive value within the model as an independent variable. Thereafter, simple linear regression analysis was run to test hypothesis 4b. Assumptions were also tested prior to all regression analyses being run.

A two-step hierarchical multiple regression analysis was employed to test the TPB variables as predictors to intention and the value of adding role-identity to the model. In the first step, the TPB variables (attitudes, subjective norms and PBC) were inputted as independent variables in relation to intention as the dependent variable. The model was seen to be significant ( $R^2 = .346$ , adjusted  $R^2 = .334$ ,  $F_{3, 165} = 29.09$ ,  $p < .001$ ). Attitude was seen to be a significant predictor of intention ( $\beta = .477$ ,  $t = 5.632$ ,  $p < .001$ ). However subjective norms ( $\beta = .151$ ,  $t = 1.69$ ,  $p = 0.92$ ) and PBC ( $\beta = .129$ ,  $t = 1.66$ ,  $p = .099$ ) were seen to be insignificant predictors. Therefore, the TPB model does not seem to be as predictive as expected with attitude being the only significant predictor of intention accounting for 34.6% of the variance in intention. Therefore, hypothesis 1b is supported and hypotheses 2b and 3b were rejected in favour of the null hypotheses. In the second step of the hierarchical multiple regression, analysis role-identity was added to the model to investigate if it will add more predictive value to the model. The overall model was seen to be significant ( $R^2 = .353$ , adjusted  $R^2 = .337$ ,  $F_{4, 164} = 22.354$ ,  $p < .001$ ). However only attitude was again seen to be a significant predictor ( $\beta = .452$ ,  $t = 5.211$ ,  $p < .001$ ) with subjective norms, PBC and role-identity ( $\beta = .175$ ,  $t = 1.323$ ,  $p = 0.188$ ) all seen to be insignificant predictors therefore hypothesis 6b was also seen to be rejected in favour of the null hypothesis.

Simple linear regression analysis was run to test hypothesis 4b where actual attendance behaviour was the dependent variable and intention the independent variable in order to estimate the predictive value of intention towards actual attendance behaviour. The model was seen to be significant ( $R^2 = .091$ , adjusted  $R^2 = .085$ ,  $F_{1, 165} = 16.493$ ,  $p < .001$ ). Intention was seen to be a significant predictor of actual attendance behaviour ( $\beta = 6.605$ ,  $t = 4.061$ ,  $p < .001$ ). Therefore, hypothesis 4b was supported (See Table 9 below for a summary of regression analysis results).

Table 9

*Summary of regression analysis results*

	$\beta$	$t$	$p$
(Constant)			
ATT	.477	5.632	<.001
SN	.151	1.69	.92
PBC	.129	1.66	.099
RID	.175	1.323	.188
(Constant)			
Intention	6.605	4.061	<.001

*Note.*  $N = 169$ . Constant = Actual lecture attendance. ATT = Attitude. SN = Subjective Norm. PBC = Perceived Behavioural Control. RID = Role-identity.

**Assumptions of hierarchical multiple regression analysis.** The following assumptions were tested before hierarchical multiple regression was run. Firstly, independent errors were evaluated utilising the Durbin-Watson test. Field (2013) suggests that a value between 1 and 3 meets the assumption of independent errors. The Durbin-Watson score that was calculated was 1.77, therefore the value is less than 3 but greater than 1 meeting the outlined criteria. This indicated that any errors within the data are random and independent. To determine if the residuals within the model are normally distributed a P-P plot was created (See Appendix H Figure 7). The scores would need to follow the central diagonal to indicate a perfect normal distribution. The P-P plot shows a general cluster of the scores along the central diagonal therefore the assumption of normality is met. A histogram was also created to further validate normality (See Appendix H Figure 8). For multi-collinearity to be assumed between the independent variables, the results of the variance inflation factor (VIF) is looked at. The VIF needs to be <10 across all independent

variables. This assumption is met across both steps of the regression with VIF values ranging from 1.17 to 1.68. Homoscedasticity was tested using a scatterplot which displayed standardised residuals against standardised predicted values. A scatterplot was created which did not show a pattern or tunnelling of the residuals which met the assumption of homoscedasticity (See Appendix H Figure 9). The scatterplot was also used to test linearity. No curved pattern was shown therefore the assumption of linearity was met. Lastly, the assumption relating to the sample size needs to be met. According to Tabachnick and Fidell (2006), the sample size used needs to be at least eight times greater than the number of independent variables used within the model. The first model had 3 independent variables and the second model had 4. The sample size is 169, therefore, the sample size would need to be at least 24 for model 1 and 32 for model 2, therefore, this assumption is met.

**Assumptions of simple linear regression analysis.** The following assumptions were tested before simple linear regression was run. Firstly, the assumption of independent errors was evaluated utilising the Durbin-Watson test. The Durbin-Watson score that was calculated was 2.3, therefore the value was  $>1$  and  $<3$ , therefore, meeting this assumption. To test the assumption of normality within the data a P-P plot was utilised (See Appendix I Figure 10). The scores followed the central diagonal in a general cluster, therefore, the assumption was met. This was further inferred using a histogram (See Appendix I Figure 11). Homoscedasticity was tested using a scatterplot which displayed standardised residuals against standardised predicted values. A pattern or tunnelling of the residuals was not shown therefore the assumption of homoscedasticity was met. The scatterplot was also used to test linearity (See Appendix I Figure 12). No curved pattern was shown, the assumption of linearity was therefore met. Lastly, the assumption of sample size was tested using the guideline of Tabachnick and Fidell (2001), the sample size needed to be at least eight times greater than the number of independent variables used within the model. There is 1 independent variable and the sample size is 169, therefore, the sample size meets this assumption.

## **ANOVA analysis**

ANOVA analysis was conducted to determine if there are any evident differences in intention to attend lectures across gender, race, socioeconomic status and between the two selected courses (MAM1016S and BUS1007S). An analysis was also run across these factors in relation to

actual attendance. Firstly, in relation to intention, the results for differences across gender, race, socio-economic status and between the two selected courses were not significant ( $p > .05$ ). Therefore, differences in scores in intention cannot be seen to be accounted for by these factors. Secondly, in relation to actual attendance, all results for differences across gender, race and socio-economic status were insignificant ( $p > .05$ ), except for differences between the two selected courses. It was seen that ANOVA results where course affiliation was the independent variable and actual attendance was the dependent variable were significant ( $F_{1,167} = 140.96$   $p < .00$ ) where the MAM1016S course showed higher attendance ( $M = 81.46$ ,  $SD = 15.08$ ,  $n = 81$ ) and the BUS1007S course showed significantly lower attendance ( $M = 41.27$ ,  $SD = 26.80$ ,  $n = 88$ ) in relation to MAM1016S.

## Conclusion

The results of the study saw 7 hypotheses supported out of the 11 hypotheses tested. Attitude, subjective norms, PBC and role-identity were seen to be significantly related to intention in support of hypotheses 1a, 2a, 3a and 6a. Attitude was seen to be the only significant predictor of intention in support of hypothesis 1b however, rejecting hypotheses 2b, 3b, and 6b in favour of the null hypotheses. Finally, hypotheses 4a and 4b were supported as intention was seen to be positively related to actual attendance behaviour and a significant predictor. The main findings of the study are summarised in Table 10 below.

Table 10

### *Summary of findings*

<i><b>Hypothesis</b></i>	<i><b>Finding</b></i>
<b>H1a:</b> The strength of a student's intention to attend lectures is positively related to attitude towards lecture attendance behaviour.	Supported
<b>H1b:</b> A favourable attitude towards lecture attendance behaviour will be a significant predictor of intention towards lecture attendance behaviour.	Supported

<b>H2a:</b> The strength of a student's intention to attend lectures is positively related to subjective norms towards lecture attendance behaviour.	Supported
<b>H2b:</b> Favourable subjective norms towards lecture attendance behaviour will be a significant predictor of intention towards lecture attendance behaviour.	Not significant. Hypothesis rejected in favour of the null hypothesis.
<b>H3a:</b> The strength of a student's intention to attend lectures is significantly related to perceived behavioural control towards lecture attendance behaviour.	Supported
<b>H3b:</b> Perceived behavioural control over attending lectures will be a significant predictor of intention towards lecture attendance behaviour.	Not significant. Hypothesis rejected in favour of the null hypothesis.
<b>H4a:</b> Intention to attend lectures will be positively related to actual lecture attendance behaviour.	Supported
<b>H4b:</b> Intention to attend lectures will be a significant predictor of lecture attendance behaviour.	Supported
<b>H5a:</b> Actual behavioural control will be a significant predictor of lecture attendance behaviour.	Not significant. Hypothesis rejected in favour of the null hypothesis.
<b>H6a:</b> The strength of a student's intention to attend lectures is positively related to a student's role-identity.	Supported



<b>H6b:</b> A Student's role identity will significantly predict intention towards lecture attendance behaviour.	Not significant. Hypothesis rejected in favour of the null hypothesis.
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## **Discussion**

The current study sought to explore the utility of the TPB model in investigating lecture attendance behaviour amongst undergraduate students with the addition of role-identity as a variable within the model. It also sought to contribute to the existing literature around the TPB model in its entirety and lecture attendance specifically within a South African context. The following section will outline the main findings of the current study as well as outline the contributions and implications found. Finally, outlining the limitations and recommendations for future research whilst providing a conclusion to the study.

### **Analysis of psychometric properties of the TPB scales within the study.**

The reliability, CFA and EFA analyses conducted in this study across the various scales showed strong support for the TPB scales and the role-identity scale. CFA was run based on the TPB as well as research within the theory postulating evidence that an oblique three-factor structure between attitudes, subjective norms and PBC should occur (Ajzen, 2002). Salleh and Albion (2004), explored varying factor analysis techniques in relation to the TPB considering both EFA and CFA. Similar results were found through CFA analysis showing that attitudes, subjective norms and PBC were seen to create three separate correlating factors. Hagger and Chatzisarantis (2005) further tested the distinct factors of these three variables focusing on the concept of discriminant validity stating that the three variables would load onto separate factors and found confirmatory results further validating the results found within the study. The EFA analysis across all scales used within the study showed a unidimensional structure, confirming findings of previous use of all the scales within the current study (Ajzen & Madden, 1986; White et al., 2008; White et al., 2011).

Previous studies applying TPB variables in relation to the measure of lecture attendance found the following reliability scores. Firstly, ABC was seen to have a low-reliability score below .70. However, the reliability of the measure was close at .652 deeming it reliable enough to use analytically within the study. ABC is usually not measured and utilised within TPB studies and therefore the low reliability of this measure may be due to the lack of measurement

development throughout previous research (Pownell, 2012; White et al., 2008; White et al., 2011; Webb et al., 2007).

Attitude scales across studies have seen high-reliability scores with an average Cronbach alpha of .80 (Ajzen & Madden, 1986; Pownell, 2012; White et al., 2008; White et al., 2011; Webb et al., 2007). The study by Ajzen and Madden (1986) as well as the study by White et al. (2011) found the highest reliability score for the attitude scale at .86 in both studies. The current study saw a similar score of .85 showing alignment with previous scales utilised.

The subjective norms scale in the current study saw a reliability score of .74. In relation to other studies this was seen to be low, as the average reliability seen across studies using subjective norms in relation to lecture attendance is .81 (Ajzen & Madden, 1985; Pownell, 2012; White et al., 2008; White et al., 2011; Webb et al., 2007). Studies using the subjective norms scale outside of investigating lecture attendance behaviour have seen the subjective norms scale to have the weakest Cronbach's coefficient alpha values. Sutton (1998) suggests that this may be due to there being single items per referent groups within the subjective norms scale. The current study only used one item per referent group, therefore, the suggestion by Sutton (1998) to increase the items per referent group may increase the reliability of the subjective norms scale. The intention ( $\alpha = .91$ ) and PBC ( $\alpha = .75$ ) scale used within the current study saw significantly higher reliabilities compared to previous studies (Intention scales in previous studies showed an average of  $\alpha = .79$ ; PBC scales in previous studies showed an average of  $\alpha = .70$ ).

Lastly, the role-identity scale used within the current study saw a reliability of .79, this saw a close alignment to previous studies where an average Cronbach's coefficient alpha of .80 was seen (Pownell, 2012; White et al., 2008; White et al., 2011; Webb et al., 2007). The CFA and EFA analysis in the current study also supported the use of the attitude, subjective norms, PBC, intention and role-identity scales.

These results corroborate the utility of the scales within the current study in relation to previous research conducted. These results further emphasise the utility of Ajzen's (2013) guidelines in TPB scale development which was used to construct the attitudes, subjective norms,

PBC, ABC and intention scales. Furthermore, the adaptation of the role-identity scale from White et al. (2008) had strong support in its utility through both reliability and EFA analysis.

### **The relationship between indirect and direct measures**

The theoretical assumptions of the TPB show that the direct measures for attitudes, subjective norms and PBC are hypothesised to be strongly related to the indirect measures for each variable outlined (Ajzen, 1991; 2005, 2013). This notion was strongly supported within the current study as all indirect measures for attitudes, subjective norms and PBC showed significant correlations between direct and indirect measures. However, the PBC direct measure saw a negative relationship with the indirect PBC measure, which does not align to previous research which has found a .54 positive correlation between the PBC indirect and direct measure (Ajzen & Madden, 1986).

### **Effect of demographic characteristics on results**

Though the aims of the study were not to explore demographic characteristic effects on results, ANOVA analysis was conducted to further understand the main study results. No differences were found across factors (gender, race and socio-economic status) except for differences seen between the two courses analysed in relation to actual attendance. It was seen that the course (MAM1016S; which had compulsory lecture attendance for students registered for the course) had higher attendance results. The difference in the resultant means suggests that having compulsory attendance for a registered course increases attendance rates amongst students. Studies have seen similar results (Berenson, Carter & Norwood, 1992; Clair, 1999; Daud, Bagria, Shah & Puryer, 2017; Devadoss & Foltz, 1996), many of which advocate for compulsory lecture attendance to increase attendance rates.

### **Relationships between the variables**

**Attitudes and intention.** Previous research has found moderate to strong relationships between attitude and intention. Across TPB studies examining lecture attendance behaviours a

mean correlation of .37 was found (Ajzen & Madden, 1986; Gump, 2006; Webb et al., 2007). This result aligns closely to the present study results where a significant moderate correlation was found ( $r = .57, p < 0.01$ ). Several TPB studies examining the attitude and intention relationship across varying behaviours has found this relationship to be the strongest compared to the other variables within the TPB model related to intention (subjective norms and PBC) (Armitage & Conner, 2001). Studies have found that dependent on the behaviour being examined the attitude and intention relationship varies, where some behaviours are seen to be attitude driven and some are subjective norm driven (Armitage & Conner, 2001; Montano & Kasprzyk, 2015). The current study has seen a strong attitude and intention relationship compared to the correlations between subjective norms ( $r = .31, p < 0.01$ ) and PBC ( $r = .43, p < 0.01$ ). This may suggest that the behaviour in question of lecture attendance within the current study may be attitudinally driven.

**Subjective norms and intention.** Previous studies looking at varying behaviours in relation to the subjective norm and intention relationship have found this relationship to be the weakest (Sheppard et al., 1988; Van den Putte, 1991) to the extent to which studies have removed the subjective norm construct completely out of their study (e.g. Sparks, Shepherd, Wieringa, & Zimmermanns, 1995). In the context of lecture attendance behaviour examination, a similar weak result has been found across research, where the subjective norm construct showed the weakest intention relationship compared to attitude and PBC (Ajzen & Madden, 1986; Gump, 2006; Webb et al., 2007). The current study validated this as the subjective norm to intention relationship was seen to be the weakest ( $r = .31, p < 0.01$ ) however, still significant.

**Perceived behavioural control and intention.** The relationship between PBC and intention has been examined closely across many studies due to the recent addition it holds in the TRA model to create the TPB. Previous studies examining differing behaviours have found the PBC and intention relationship to be significant (Armitage & Conner, 2001). Ajzen and Madden found a strong PBC and intention relationship compared to both attitude and subjective norms when examining lecture attendance ( $r = .57, p < 0.01$ ). Similarly, Webb et al. (2007) found the PBC and intention-behaviour to be the strongest ( $r = .61, p < 0.01$ ) compared to subjective norms and attitudes. The current study found a significant positive relationship between PBC and intention. However, the current study found the PBC and intention-behaviour to be weaker ( $r = .43,$

$p < 0.01$ ) than the attitude and intention relationship but stronger than the subjective norm and intention-behaviour. This finding further validates previous findings for the utility in the addition of PBC to create the TPB model (Rivis, Sheeran, & Armitage, 2009).

**Role-identity and intention.** Role-identity though not a part of the TPB model has been argued to increase the utility of the model through its addition. The study by White et al. (2008) found a strong correlation between intention and role-identity ( $r = .67, p < 0.01$ ). The correlation was found to be stronger than intention and the TPB variables. The current study did not validate these results as a correlation of .33 was found. However, the correlation was still stronger than the subjective norms and intention relationship. Though the results are slightly differing a significant relationship was still found between role-identity and intention indicating it could potentially increase the validation of the TPB.

**Intention and actual attendance behaviour.** Intention is seen to be the most pivotal relationship within TPB studies. It is arguably seen to be emphasised in the aims of investigation in multiple studies (Armitage & Conner, 2001). White et al. (2008) found a .41 correlation between intention and actual attendance to peer-assisted study sessions. The current study saw a .30 significant correlation between intention and actual attendance behaviour. Though slightly lower the result aligns with previous studies by showing a significant relationship (Ajzen & Madden, 1986; Gump, 2006; Webb et al., 2007).

### **Predictors of intention to attend lectures**

The current study first evaluated the TPB variables as predictors of intention to attend lectures. Attitude towards lectures was a significant predictor of intention to attend lectures ( $\beta = .477, t = 5.632, p < .001$ ). Subjective norms and PBC were not significant predictors. The TPB model was seen to account for 34.6% of the variance in intention to attend lectures. The results specifically show that having a favourable attitude towards attending lectures has a significant impact on whether students will attend lectures or not. These results further suggest that students do not perceive pressure from those around them and their control over attending lectures to be important factors which influence whether they would attend lectures or not. Previous research has

specifically highlighted the issues with subjective norms seen. White et al. (2011) found subjective norms to be an insignificant predictor of attendance at peer-assisted study sessions. These results further validate the growing criticism seen in relation to the subjective norm factor as many studies have found that social influences have a limited impact on an individual's behaviour (Armitage & Conner, 2001). Further to the results seen Ajzen and Madden (1986) found subjective norms to be an insignificant predictor of intention to attend lectures within their study. The poor performance of the subjective norm component is seen to be due to the measurement of the variable. The single items used to measure each referent group within the subjective norm factor is argued to impact the results of the variable (Nunnally, 1978).

Furthermore, PBC was also not seen as a significant predictor of intention to attend lectures. This aligns with previous research. PBC was seen to be an insignificant predictor of attendance at peer-assisted study sessions (White et al., 2008; 2011). However, the study by Ajzen and Madden (1986) found that PBC was a significant predictor of intention to attend lectures. This does not align with the results of the current study. However, as results vary across studies, external factors may be explanatory in the difference in the significance of PBC as a predictor of intention to attend lectures. Beck and Ajzen (1991) have suggested that to increase the accuracy in the measurement of the PBC factor a reliance on an increase in experience of the behaviour amongst respondents is needed. It is suggested that the more the respondents experience/execute the behaviour in question the more the behaviour is likely to be predicted. This could possibly be an explanation as to why within the current study PBC was not a significant predictor of intention to attend lectures. Most of the respondents were first-year students and a small percentage were students in later years taking first-year courses. However, many respondents were students who entered university approximately 6 months earlier. Therefore, the behaviour of attending lectures was a relatively new experience for many of the respondents, therefore, they may still be exploring the control they have over attending lectures. Measuring PBC amongst students in later years of study may show differing results in support of previous research (White et al., 2008).

Lastly, role-identity was added to the model to assess the predictive value it might add to the TPB model. Role-identity was not found to be a significant predictor of intention to attend lectures and did not add any predictive value to the model. This is contradictory to previous studies

(White et al., 2008; 2011). This finding suggests that students do not feel a sense of alignment between attending lectures as being a part of their role as a student. White et al., (2008) suggests that future research should focus on a refinement of the role-identity scale as it is not widely used and therefore not established. A refinement of the scale may yield the utility of role-identity in predicting intention to attend lectures increasing. A suggestion is made to create a refinement of the scale between personal and social identity to create a balance, meeting the proposed measurement intention of the role-identity construct.

### **Actual behavioural control as a moderator**

Research has shown that actual behaviour is likely to translate from intention as an antecedent when the presence of ABC is seen (Ajzen, 2002). Though behavioural beliefs held by individuals may be accurate, theoretically research shows a meaningful separation between the perception of behavioural control and ABC across TPB studies. Furthermore, the linkage between intention and behaviour is increased through the presence of ABC (Conner, & Armitage, 1998; Meusbarger, Werlen & Suarsana, 2017; Sheeran, Trafimow, & Armitage, 2003). Ajzen (2012) argued that even though intention is identified as a key predictor of behaviour, the presence of ABC is a necessity for the behaviour to occur. The current study, however, found that ABC does not show a significant moderating effect on the relationship between intention and behaviour observed. Previous research has investigated the moderating the effect of ABC. However, Rosenthal (2018) found a significant moderating effect of ABC between intention and behaviour observed. Though theoretically outlined in many studies the utility of ABC as a moderator has been rarely investigated. This may be due to ABC being found as a difficult construct to measure (Ajzen, 2005).

Therefore, PBC is often used as a proxy measure for ABC due to the increase in reliability of the PBC measure (Ajzen, 2005). Additionally, the measurement issues found in the ABC measures across studies are hypothesised to be due to the self-report nature of the measurement (Terre Blanche & Durrheim, 2006). It is suggested that by using indirect self-report measures, accuracy cannot be assumed (Sheeran, Trafimow, & Armitage, 2003). Therefore, it is suggested that where possible direct measures of examination that may be available should be utilised. This



could range from finding relating data or carrying out observation procedures to mitigate the bias found in self-report. This would still create a measurement for actual behavioural control and remove reliance on the PBC measure (Sheeran, Trafimow, & Armitage, 2003).

### **Intention as a predictor of lecture attendance behaviour.**

Intention was seen to be a significant predictor of lecture attendance behaviour within the current study ( $R^2 = .091$ , adjusted  $R^2 = .085$ ,  $F_{1, 165} = 16.493$ ,  $p < .001$ ). This suggests that the sample were most likely to attend lectures if they intended to do so. Previous research has found similar results (Ajzen & Madden, 1986; Gump, 2006; Webb et al., 2007). Intention was seen to be strongly influenced by attitudes and this attitudinally driven intention was seen to predict lecture attendance behaviour. Previous studies saw a predictive intention and behaviour relationship with an attitude and PBC driven intention (Ajzen & Madden, 1986; White et al., 2008; White et al., 2011). This is contrary to the current study which saw only an attitudinally driven intention being predictive of lecture attendance behaviour.

### **Contributions of the current study**

The current study has contributed to research investigating lecture attendance behaviour and the Theory of Planned Behaviour in varying ways. Firstly, the study has contributed to the application of the TPB as a prediction model. Secondly, the study has contributed to supporting previous research findings showing the utility of attitudes in predicting behavioural intention. Thirdly, the study provided further evidence around the prediction relationship between behavioural intention and the behaviour observed. Lastly, the study has contributed to generating further knowledge around understanding lecture attendance behaviour.

**Theoretical implications.** The current study applied the Theory of Planned Behaviour within the research process, therefore adding to the existing literature applying the TPB in a South African context. Furthermore, adding to literature around the addition of role-identity within the TPB as a prediction model. Attitudes were found to be the most significant predictor of behavioural intention, which aligns to previous research (Ajzen & Madden, 1986; Armitage & Conner, 2001;

Gump, 2006; Webb et al., 2007). The study also supported the finding that a predictive relationship lies between intention and behaviour (Ajzen & Madden, 1986; Armitage & Conner, 2001; Gump, 2006; Webb et al., 2007). This supports the main notion of the TPB that by measuring intention to commit a behaviour, the use of the measurement can aid in understanding behaviour as a predictive relationship lies between intention and behaviour (Ajzen, 2012). The scales used to measure the TPB constructs within the current study also showed significant reliability and validity results further adding to results validating response formats and the guidelines provided by previous research on how to construct a TPB questionnaire. The behavioural beliefs linked to each TPB construct showed strong correlations further validating the behavioural beliefs that are theoretically outlined to be linked to the TPB constructs.

Overall, the current study has added to the limited research empirically assessing lecture attendance behaviour. Furthermore, this study aimed to narrow a gap in research providing insight into the addition of role-identity within the TPB model specifically investigating lecture attendance behaviour due to the limited research available on this topic.

**Practical implications.** Lecture attendance amongst students has become a primary focus due to the increase in the instability within the university environment (Badat, 2016). Studies show that lecture attendance is linked to increasing student performance indicating that increasing lecture attendance can facilitate an increase in student success (Jakee, 2011; Nordmann, Calder, Bishop, Irwin & Comber, 2018; Gbadamosi, 2015). Many universities are considering the impact of lecture attendance not only due to the social instability within the university environment but also the increase in the presence of technology (recorded lectures, online academic tools, online library databases etc.) in the academic environment (Yeung, Raju & Sharma, 2016). Therefore, the results of the current study which shows that student attitudes toward lectures significantly effects whether students intend on attending lectures or not can help individuals understand the lecture environment. This result can help facilitate how attitudes towards lectures can be considered in strategies generated to increase lecture attendance. White et. al (2008) suggests that due to the significant predictive value of attitude with intention, universities can implement strategies which encourage lectures and introduce positive perspectives around lectures such as advertising and incentives. This could be achieved through the involvement of lecturers in

encouraging students during lecture periods. The significant predictive relationship found between intention and behaviour can further add knowledge into understanding lecture attendance. Overall, the findings of the study can aid universities in understanding the phenomenon of lecture attendance which may assist in the development of strategies to increase lecture attendance due to its link with academic performance.

### **Limitations and suggestions for future research**

Though the above contributions, theoretical and practical implications can be seen within the current study, several limitations may be addressed for future research conducted on this topic.

**Longitudinal research design.** Firstly, the current study applied a cross-sectional research design approach by collecting data at one specific point in time. It is suggested that future studies apply a longitudinal approach to allow for causal inference amongst the study variables (Spector, 1994). Assessing intentions long term would allow for a more accurate representation of the construct. Furthermore, whilst the current study measured the indirect beliefs behind each direct variable, it was measured concurrently. It is suggested to rather conduct a pilot study and base the development of the direct variables on the results of the indirect measurements (Ajzen, 2013). This longitudinal approach may aid in a better measurement of the study variables. Adopting a longitudinal design may also aid in accurately measuring intentions by measuring any change in intentions over time.

**Measurement limitations.** The current study used self-report measures through the data collection process. This poses a threat to the validity of the study as social desirability bias may occur whereby respondents may have not answered truthfully. Though the current study assured respondents that their responses will be kept anonymous, this is not a strong enough deterrent to reduce social desirability bias (Zammuner & Galli, 2005). As such the occurrence of social desirability bias may have unduly influenced the results of the current study. It is further suggested that in conjunction with maintaining the anonymity of responses to reduce social desirability, future research may also use social desirability scales to help with the reduction. The inclusion of

social desirability scales within a study is suggested to correct for any bias which may occur across respondents (Beck & Ajzen, 1991).

Secondly, the ABC scale within the study was seen to have a slightly lower reliability of .652. The removal of items did not see an increase in the reliability of the measure. Though the reliability of the measurement was strong enough for analysis it may be beneficial to further develop the scale. ABC was measured using three items. Future research may benefit from increasing the number of items within the scale to possibly increase the reliability of the measure (Sloan et al., 2002).

Lastly, the use of an adaptation of the White et al. (2011) scale may have influenced the results of the study. Though the scale produced sound psychometric properties within the current study and previous studies, it has only been used a handful of times and therefore may not produce similar results in future studies. More research needs to be conducted in exploring this measure to ensure increased reliability and validity. Therefore, further scale development is suggested for future research.

**Sampling limitations.** Due to time and resource constraints, the current study used a specific cohort of the population of first-year students from two specific course at the University of Cape Town. To increase generalisability, it is recommended that more courses be chosen to make up the sample within the study and include other universities either in the Western Cape or ideally within South Africa. The use of a purposive sampling technique implies a lack of control over variability and occurrence of bias within the study (Acharya, Prakash & Nigam, 2013). The sample was also mainly attained through lectures and therefore access to students who do not attend lectures was limited. Though an online questionnaire was created only 59 of the respondents were attained through the online questionnaire. Future research should try attaining permission to collect data after a test or assessment period where students who do not attend lectures will be present. This would increase the diversity within the sample to create a more accurate representation of the sample.

A further limitation is the sample size gained and utilised within the study. The CFA analysis specifically recommends a sample size greater than 200. The current study sample of 169 was adequate but not strong and could have increased reliability, validity and overall generalisability if the sample consisted of 200 participants or more. A greater sample could have also created a better representation of the population in question.

## **Conclusion**

Lecture attendance is a behaviour that has been examined over multiple studies across varying fields due to the interest in investigating the link lecture attendance and academic performance (Louis, Bastain, Mckimme & Lee, 2015; Papageorgiou & Townsend 2014; Schmulian & Coetzee 2011; Steenkamp, Baard and Frick, 2009; Thatcher, Fridjhon & Cockcroft 2007; Walbeek 2004). Evidence has shown that the TPB is a useful model in understanding and predicting varying behaviours (Armitage & Conner, 2001). The model of the theory is also said to be more predictive with the addition of role-identity. The current study aimed to investigate the addition of role-identity into the TPB prediction model to understand lecture attendance behaviour. The current study extended the limited research on the addition of role-identity into the TPB when looking at lecture attendance behaviour specifically in the South African context. The model was also analysed in its entirety by also including a measurement and analysis of the ABC measure.

The findings of this study firstly show that attitudes, subjective norms, PBC and the addition of role-identity are strongly correlated to behavioural intention. This is in line with previous research (Ajzen & Madden, 1986; Pownell, 2012; White et al., 2008; White et al., 2011; Webb et al., 2007). Further to these results attitudes was seen to be a significant predictor of intention to attendance lectures amongst the sample of first-year undergraduate students at the University of Cape Town which aligns with previous results and partially supports the tenants of the Theory of Planned Behaviour (Ajzen & Madden, 1986; Pownell, 2012; White et al., 2008; White et al., 2011; Webb et al., 2007). This finding suggests that a focus on attitudes towards lectures should form the basis of interventions aimed to increase lecture attendance behaviour. Though subjective norms, PBC and role-identity were not seen to be predictors of intention to attend lectures, there was still a significant predictive relationship found between intention to

attend lectures and lecture attendance behaviour. However, ABC was not seen to moderate this predictive relationship between intention and behaviour observed. Overall, as the volatility of the university environment increases, an emphasis is placed on understanding lecture attendance behaviour. This may help with the understanding of student behaviour with the aim to overall enhance academic performance within the university environment.

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## Appendix A

*Full questionnaire administered within the current study*



## SURVEY ON LECTURE ATTENDANCE

This survey is part of an important investigation about the reasons why students attend or fail to attend lectures. Specifically, we are interested in your personal opinions regarding regular lecture attendance. Please read each question carefully and answer it to the best of your ability. There are no correct or incorrect responses; we are merely interested in your personal point of view.

Thank you for your participation in this study.

*Nadira Majudith*

If you have any questions, feel free to contact us using the details below.

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### Please note:

This survey will contribute to the completion of my Organisational Psychology Masters research project on lecture attendance.

Participation in this study does not pose any risks to you as a participant and is voluntary. You may drop-out at any point.

Once you complete and submit this survey, you are acknowledging acceptance that participation in this study has been at your own free will.

All data will be kept confidential and shared only for the purpose of this research project. The instructor of your course has no participation in the study process and will not see your responses. All identifying information will be removed from this questionnaire and destroyed as soon as all data has been collected. Please be assured that the information you provide in this study will have no effect on your grade.

Please answer each of the following questions by circling the number that best describes your opinion. Some of the questions may appear to be similar, but they do address somewhat different outcomes.

Your views of whether you will attend lectures until the end of this semester:

1. How likely are you to attend lectures until the end of this semester on a regular basis?

extremely unlikely :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: extremely likely

2. I plan to attend lectures until the end of this semester on a regular basis.

extremely unlikely :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: extremely likely

3. I will make an effort to attend lectures on a regular basis

extremely unlikely :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: extremely likely

How do you feel about attending lectures:

4. For me to attend the lectures until the end of this semester on a regular basis is

extremely worthless :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: extremely valuable

5. For me to attend the lectures until the end of this semester on a regular basis is

extremely bad:\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: extremely good

6. For me to attend the lectures until the end of the semester on a regular basis is

unacceptable:\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: acceptable

What do you believe about lecture attendance:

7. Attending lectures until the end of this semester will help me to gain a better understanding of the subject matter

strongly disagree :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: strongly agree

8. Attending lectures until the end of this semester will help me get a high grade in this course

strongly disagree :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: strongly agree

9. Attending lectures until the end of this semester gives me an opportunity to interact with the lecturers and other students

strongly disagree :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: strongly agree

10. Attending lectures until the end of this semester takes time away from other activities I would prefer to do

strongly disagree :\_\_1\_\_:\_\_2\_\_:\_\_3\_\_:\_\_4\_\_:\_\_5\_\_:\_\_6\_\_:\_\_7\_\_: strongly agree

11. Attending the lectures until the end of this semester on a regular basis is a waste of valuable time

strongly disagree : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : strongly agree

How do you feel about the outcomes lecture attendance:

12. Missing out on activities outside of university by attending lectures until the end of this semester is

extremely bad : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : extremely good

13. Getting information to help me gain a better understanding of the course is

extremely bad : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : extremely good

14. Getting the opportunity to interact with the lecturers and other students is

extremely bad : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : extremely good

15. Getting a high grade for the course is

extremely bad : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : extremely good

16. Wasting valuable time by attending lectures until the end of this semester is

extremely bad : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : extremely good

What are your beliefs around your control over lecture attendance:

17. For me to attend the lectures until the end of this semester on a regular basis is

extremely difficult : \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : extremely easy

18. Whether or not I attend the lectures until the end of this semester on a regular basis is completely up to me

strongly disagree: \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : strongly agree

19. I am confident that if I wanted to attend lectures until the end of this semester I would be able to

strongly disagree: \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : strongly agree

What are the impacts of these control beliefs:

20. If I encountered unanticipated events that placed demands on my time, it would make it more difficult for me to attend lectures until the end of this semester on a regular basis

strongly disagree: \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : strongly agree

21. If I felt tired or ill, it would make it more difficult for me to attend lectures until the end of this semester

strongly disagree: \_\_1\_\_ : \_\_2\_\_ : \_\_3\_\_ : \_\_4\_\_ : \_\_5\_\_ : \_\_6\_\_ : \_\_7\_\_ : strongly agree

22. If work or employment placed unanticipated demands on my time, it would make it more difficult for me to attend lectures until the end of this semester on a regular basis

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

How often do you encounter these beliefs:

23. How often do you encounter unanticipated events that place demands on your time?

very rarely : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very frequently

24. How often do you feel tired or ill?

very rarely : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very frequently

25. How often does work or employment place unanticipated demands on your time?

very rarely : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very frequently

What is your actual control over attending lectures:

26. The external support I receive make it easier for me to attend lectures until the end of this semester

strongly disagree : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

27. The current resources available to me such as transport (Jammie shuttles/car etc.) make it easier for me to attend lectures until the end of this semester

strongly disagree : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

28. My current life situation makes it easier for me to attend lectures until the end of this semester

strongly disagree : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

What do others feel about you attending lectures:

29. My lecturers think that I should attend the lectures until the end of this semester on a regular basis

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

30. My parents think that I should attend lectures until the end of this semester on a regular basis

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

31. My close friends think that I should attend the lectures until the end of this semester on a regular basis

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

32. The individual/group who is financially supporting my studies think that I should attend the lectures until the end of this semester on a regular basis

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

How much value do you place on the beliefs of others:

33. The opinion of my lecturers is important to me

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

34. The opinion of my parents is important to me

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

35. The opinion of my close friends is important to me

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

36. The opinion of the individual/group who is financially supporting my studies is important to me

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

How often do you follow what others think or say:

37. Generally speaking, I do what my lecturer thinks I should do

not at all : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very much

38. Generally speaking, I do what my parents think I should do

not at all : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very much

39. Generally speaking, I do what my close friends think I should do

not at all : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very much

40. Generally speaking, I do what the individual/group who is financially supporting my studies thinks I should do

not at all : \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very much

To what extent do you think attending lectures is part of your role as a student:

41. To what extent do you think that attending lectures this semester is a significant part of your role as a student enrolled at UCT?

not very important: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: very important

42. Generally speaking, I think it is appropriate for me as a student enrolled at UCT to attend every lecture this semester.

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

43. Thinking of myself as a student enrolled at UCT, it is not important for me to attend every lecture this semester.

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

44. For me, attending every lecture this semester will not assist in fulfilling my role as a student enrolled at UCT.

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree



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45. As a student enrolled at UCT, I think it is important for me to attend every lecture.

strongly disagree: \_\_1\_\_: \_\_2\_\_: \_\_3\_\_: \_\_4\_\_: \_\_5\_\_: \_\_6\_\_: \_\_7\_\_: strongly agree

**ABOUT YOU**

**Which course are you registered for?**

MAM1016S	BUS1007S
----------	----------

**Please specify your UCT student number:**

--

**Your age:**

--

**Your gender:**

Male	Female	Other	Prefer not to answer
------	--------	-------	----------------------

**Your race (as recorded by UCT):**

African	Coloured	Indian	Asian	White	Other	Prefer not to answer
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**Socio-economic status (please reflect on your socio-economic status while growing up**

Less than enough	Enough	More than enough	Resourced	Affluent
---------------------	--------	---------------------	-----------	----------

**Thank you!**

## Appendix B

### *Interview guideline utilised within the study*

#### *Instructions read to the participant before the interview commenced:*

- Thank you for consenting to participate in the following interview
- The interview will be recorded and transcribed for research purposes please speak clearly into the recording device used.
- There are no right or wrong responses; we are merely interested in your personal opinions.
- In response to the questions below, please describe the thoughts that come immediately to mind.

#### *Behavioural outcomes:*

- (1) What do you see as the advantages of attending lectures?
- (2) What do you see as the disadvantages of attending lectures?
- (3) What else comes to mind when you think about attending lectures?

#### *Normative referents*

When it comes to attending lectures for the next 3 weeks for (chosen course), there might be individuals or groups who would think you should or should not attend lectures.

- (1) Please describe any individuals or groups who you think would approve of you attending lectures or think that you should be attending lectures.
- (2) Please describe any individuals or groups who you think would disapprove of you attending lectures or think that you should not be attending lectures.

- (3) Sometimes, when we are not sure what to do, we look to see what others are doing. Please describe the individuals or groups of people who you think are most likely to attend lectures.
- (4) Please describe the individuals or groups of people who you think are least likely to attend lectures.

*Control factors*

- (1) Please describe any factors or circumstances that would make it easier for you to attend lectures.
- (2) Please describe any factors or circumstances that would make it difficult or prevent you from attending lectures.
- (3) Please describe any factors or circumstances that generally make it difficult for you to attend lectures.
- (4) Please describe any factors that generally motivate you to want to attend lectures.

## Appendix C

*Adapted scale utilised to measure role-identity*

- (a) “To what extent do you think that attending lectures for BUS3039S/MAM1016S this semester is a significant part of your role as a student enrolled at UCT?”
- (b) “Generally speaking, I think it is appropriate for me as a student enrolled at UCT to attend every lecture for BUS3039S/MAM1016S this semester”
- (c) Thinking of myself as a student enrolled at UCT, it is not important for me to attend every lecture for BUS3039S/MAM1016S this semester”
- (d) “For me, attending every lecture for BUS3039S/MAM1016S this semester will not assist in fulfilling my role as a student enrolled at UCT”
- (e) “As a student enrolled at UCT, I think it is important for me

## Appendix D

*Original scale from White et al. (2008) measuring role-identity.*

- (a) “To what extent do you think that attending every peer-assisted study session for 1st-year statistics this semester is a significant part of your role as a student enrolled in bachelor of social science (psychology)?
- (b) “Generally speaking, I think it is appropriate for me as a student enrolled in a bachelor of social science (psychology) to attend every peer-assisted study session for 1st-year statistics this semester”
- (c) Thinking of myself as a student enrolled in a bachelor of social science (psychology), it is not important for me to attend every peer-assisted study session for 1st-year statistics this semester”
- (d) “For me, attending every peer-assisted study session for 1st-year statistics this semester will not assist in fulfilling my role as a student enrolled in a bachelor of social science (psychology)”
- (e) “As a student enrolled in Bachelor of Social Science (psychology), I think it is important for me

## Appendix E

*Informed consent letter utilised for interviews conducted.*



Organisational Psychology Masters Research Project 2018: Attending lectures

Please participate in my Organisational Psychology Masters research project on lecture attendance.

Participation in this study does not pose any risks to you as a participant and is voluntary. All responses will be kept anonymous and confidential. You may drop-out at any point. Once you complete and submit this survey, you are acknowledging acceptance that participation in this study has been as your own free will. All data will be kept anonymous and shared only for the purpose of this research project.

If you are willing to take part in the study, please sign the informed consent letter below:

I am willing to participate in the study mentioned above:

Signed: \_\_\_\_\_

Date: \_\_\_\_\_

If you have any questions, feel free to contact me using the details below.

Researcher: Nadira Majudith

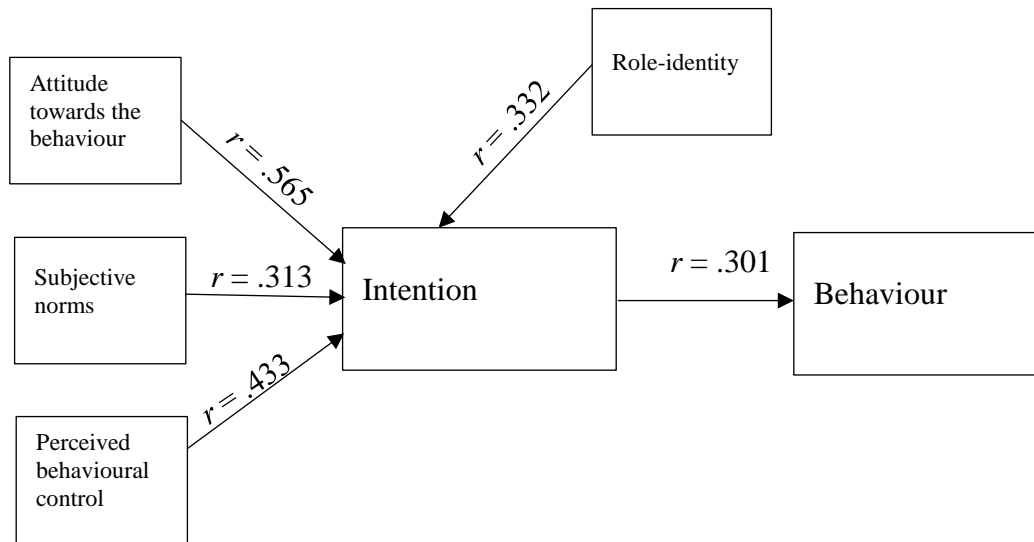
Contact number: 072 644 19 22

Email: [majudithnadira@gmail.com](mailto:majudithnadira@gmail.com)

Supervisor: Jeffrey Bagraim

Email: [jeffrey.bagraim@uct.ac.za](mailto:jeffrey.bagraim@uct.ac.za)

## Appendix F



*Figure 5: Model outline of correlation analysis performed*

## Appendix G

### Exploratory Factor Analysis

Exploratory Factor Analysis (EFA) was conducted to explore the underlying theoretical structure of each scale. It is utilised to understand if there are any latent constructs underlying each scale corresponding to each variable. Principal Axis Factoring (PAF) was utilised as the extraction method as it aims to extract the least number of factors by contrasting squared multiple correlations between all items within the analysis. PAF is seen as the most commonly used extraction method as it is seen as the most reliable method (Field, 2013). Once the extraction method is determined a consideration needs to be placed around which rotation method to employ. Rotation is only used when the factor analysis extracts more than one factor. This was not the case for any of the analyses and therefore no rotation method was employed (Field, 2013).

Before EFA was analysed a Kaiser-Meyer-Olkin (KMO) test was run. The KMO test was used to test whether the distribution of the sample for each scale is adequate to warrant factor analysis. Field (2012) states the KMO results needs to be  $> .50$  to confirm sample adequacy (Field, 2012). For each EFA conducted all values produced were greater than  $.50$ , therefore sampling adequacy was confirmed. To test whether the items within each scale adequately correlate with each other Bartlett's test of sphericity was run for each EFA. All results were seen to be significant. Therefore, EFA was considered acceptable to run for all variable scales under analysis. Factors which produce an eigenvalue above one were retained (Kaiser, 1960). The resultant factor loadings were interpreted in accordance with Merenda (1997) which suggest that factor loadings  $> .30$  may be considered acceptable.

***Attitudes scale.*** Principal axis extraction produced one significant factor as expected. The resultant factor had an eigenvalue  $> .10$  which accounted for 67.19% of the variance (eigenvalue = 2.323). Item 1 had the most significant factor loading of  $.906$  and item 3 had the least significant at  $.694$ . Table 11 below reflects the factor loadings of the items onto the single factor which was identified.



Table 11

*Attitudes scale*

		<b>ATT</b>
<b>ATT1</b>	For me to attend lecture until the end of this semester on a regular basis is 1 ( <i>extremely worthless</i> ) to 7 ( <i>extremely valuable</i> ).	.906
<b>ATT2</b>	For me to attend lecture until the end of this semester on a regular basis is 1 ( <i>extremely bad</i> ) to 7 ( <i>extremely good</i> ).	.844
<b>ATT3</b>	For me to attend lecture until the end of this semester on a regular basis is 1 (unacceptable) to 7 (acceptable).	.694
Eigenvalue		2.323
Individual total variance		77.437%
Cumulative total variance		77.437%

Note. N=169 after casewise deletion of missing data. Extraction: Principal axis. ATT = Attitude

**Subjective norms scale.** Principal axis extraction was used to assess the four items within the subjective norms scale. All items loaded onto one factor as expected with an explained variance of 59.361%. (eigenvalue = 2.374). Table 12 below outlines the factor loadings of each item within the scale.

Table 12

*Subjective norms scale*

		<b>SN</b>
<b>SN1</b>	My lecturers think I should attend lectures until the end of the semester on a regular basis.	.648
<b>SN2</b>	My parents think I should attend lectures until the end of the semester on a regular basis.	.754
<b>SN3</b>	My close friends think I should attend lectures until the end of the semester on a regular basis.	.495
<b>SN4</b>	The individual/group who is financially supporting my studies think that I should attend lectures until the end of the semester on a regular basis.	.808

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Eigenvalue	2.374
Individual total variance	59.361%
Cumulative total variance	59.361%

Note. N=169 after casewise deletion of missing data. Extraction: Principal axis. SN = Subjective norms.

**Perceived behavioural control scale.** After Principal axis factoring was run and all items loaded onto one factor with an explained variance of 66.880 (eigenvalue = 2.006). Table 13 below outlines the factor loadings of each item.

Table 13

*Perceived behavioural control scale*

		PBC
<b>PBC1</b>	For me to attend lectures until the end of the semester on a regular basis is 1 ( <i>extremely difficult</i> ) to 7 ( <i>extremely easy</i> )	.719
<b>PBC2</b>	Whether or not I attend lectures until the end of the semester on a regular basis is completely up to me	.623
<b>PBC3</b>	I am confident that if I wanted to attend lectures until the end of this semester, I would be able to	.788
Eigenvalue		2.006
Individual total variance		66.88%
Cumulative total variance		66.88%

Note. N=169 after casewise deletion of missing data. Extraction: Principal axis. PBC = Perceived behavioural control.

**Actual behavioural control scale.** The three-item scale was run through principal axis factoring and yielded one significant factor with the factor accounting for 59.291% of the explained variance and had an eigenvalue of 1.779. Table 14 below outlines the corresponding factor loadings.

Table 14

*Actual behavioural control scale.*

		ABC
<b>ABC1</b>	The external support I receive make it easier for me to attend lectures until the end of this semester on a regular basis	.530

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<b>ABC2</b>	The current resources available to me such as transport (Jammie shuttle/car etc.) make it easier for me to attend lectures until the end of the semester on a regular basis	.657
<b>ABC3</b>	My current life situation makes it easier for me to attend lectures until the end of the semester on a regular basis	.688
Eigenvalue		1.779
Individual total variance		59.291%
Cumulative total variance		59.291%

*Note. N=169 after casewise deletion of missing data. Extraction: Principal axis. ABC = Actual behavioural control.*

***Intentions scale.*** The three items constructed to measure intention all loaded significantly onto one factor as expected. This factor accounted for 85.431% of the total variance explained which is seen as a significantly high percentage. The associated eigenvalue was 2.563. Table 15 below provides more details around the factor loadings of each item within the scale.

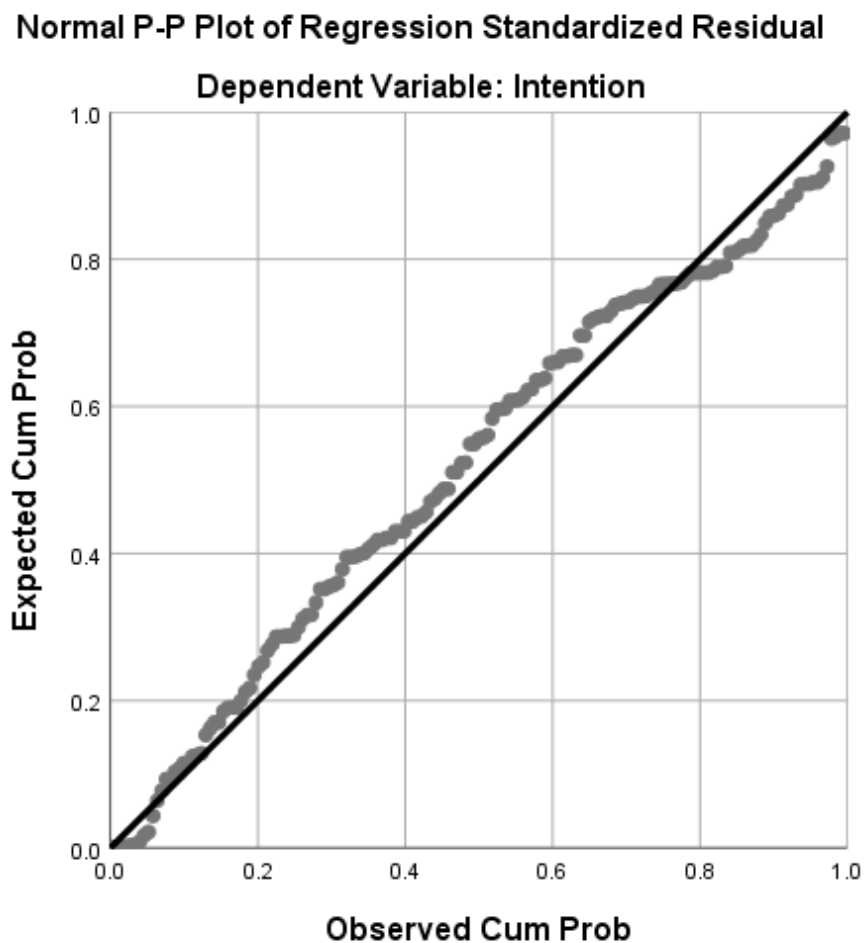
Table 15

*Intentions scale*

		<b>INT</b>
<b>INT1</b>	How likely are you to attend lectures until the end of the semester on a regular basis?	.887
<b>INT2</b>	I plan to attend lectures until the end of the semester on a regular basis	.910
<b>INT3</b>	I will make an effort to attend lectures until the end of the semester on a regular basis	.855
Eigenvalue		2.563
Individual total variance		85.431%
Cumulative total variance		85.431%

*Note. N=169 after casewise deletion of missing data. Extraction: Principal axis. INT = Intentions.*

## Appendix H



*Figure 7: Assumption testing - P-P Plot used to test normality in hierarchical multiple regression analysis.*

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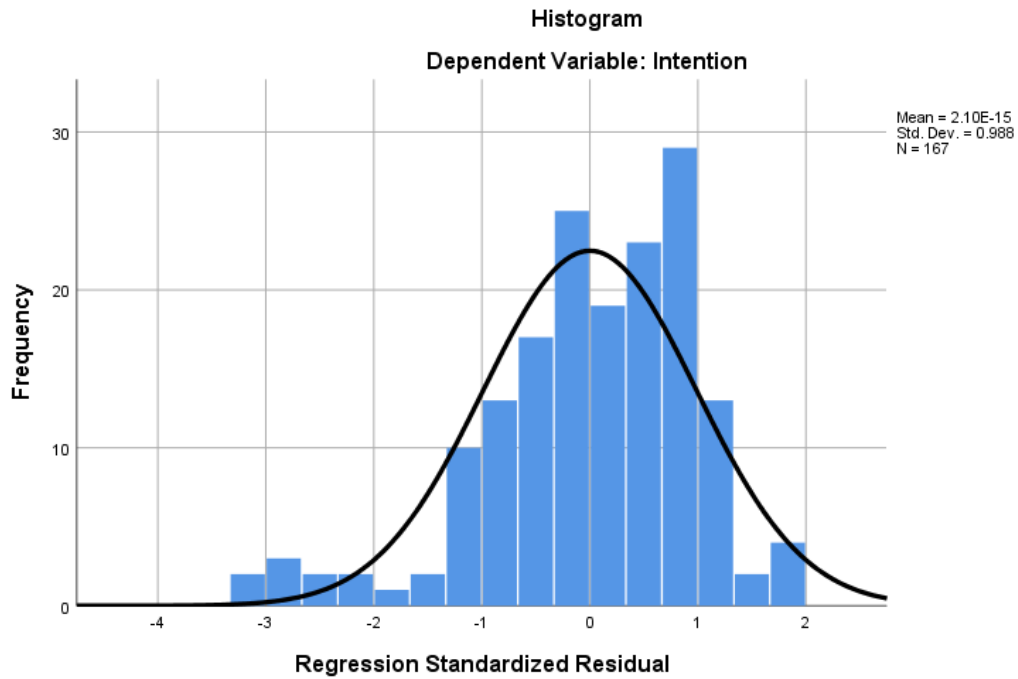
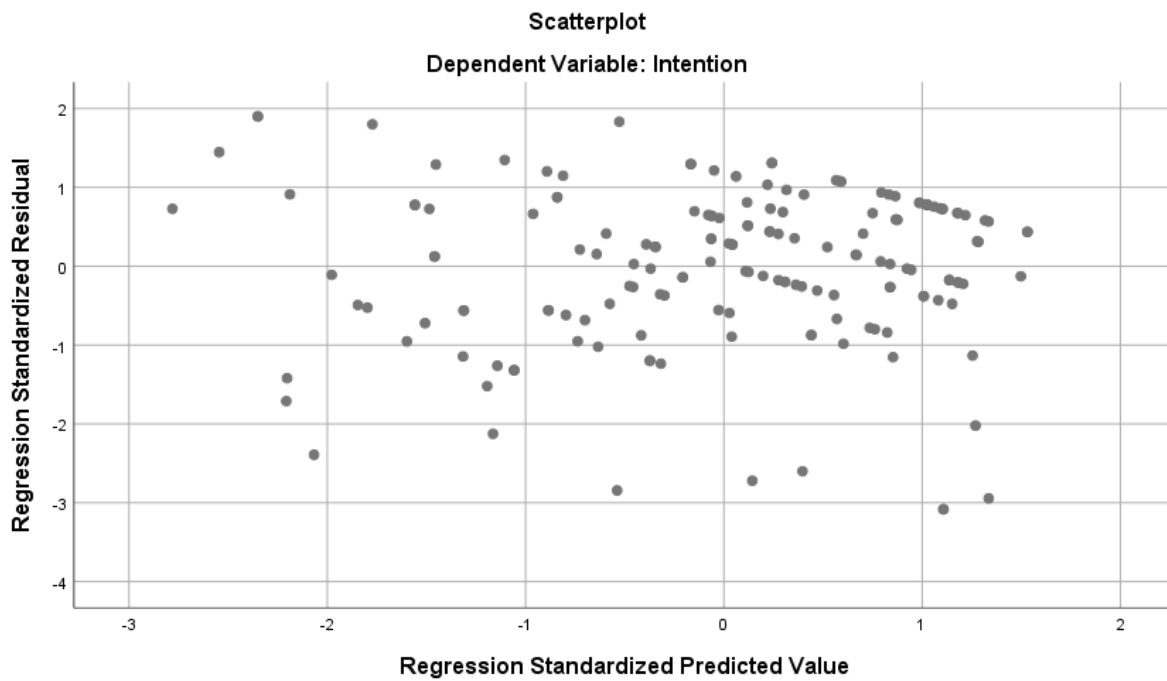


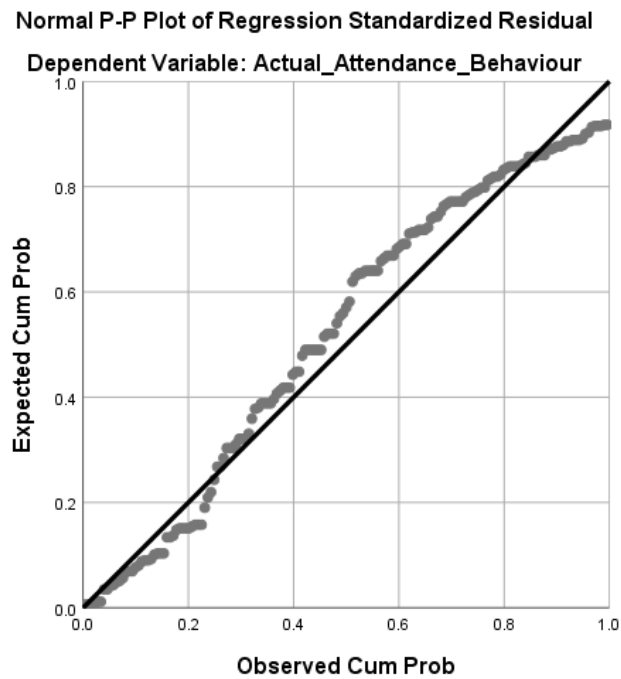
Figure 8: Assumption testing – Histogram used to test normality



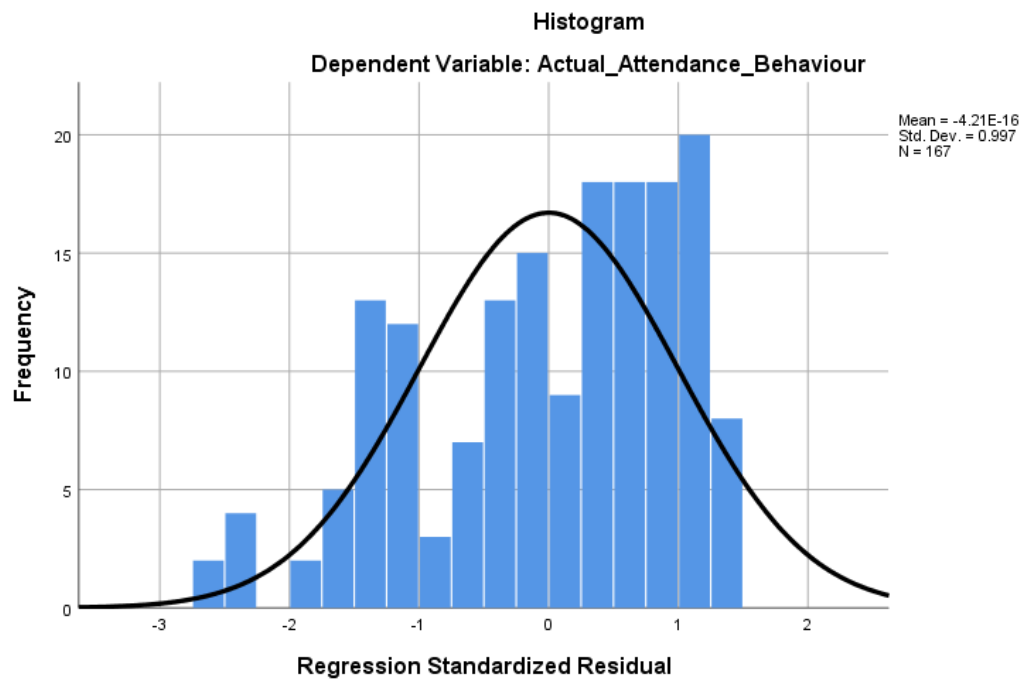
*Figure 9: Assumption testing - Scatterplot testing linearity and homoscedasticity in hierarchical multiple regression analysis.*

## Appendix I

*Figure 10: Assumption testing - P-P Plot used to test normality in simple linear regression analysis.*



*Figure 11: Assumption testing – Histogram used to test normality in simple linear regression analysis.*





*Figure 12: Assumption testing - Scatterplot testing linearity and homoscedasticity in simple linear regression analysis.*

